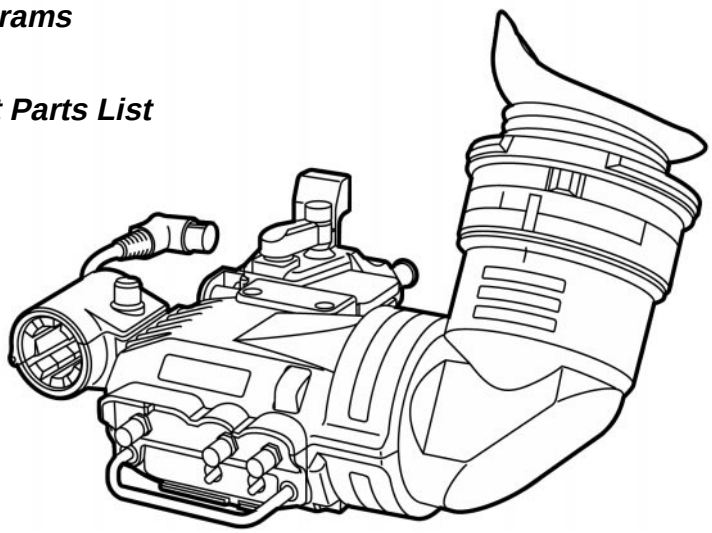
ORDER NO. BSD0009M014
D26

Service Manual

2″ Electronic HD View Finder

AJ-HVF20P

Sec. 1 Operating Instructions
Sec. 2 Disassembly Procedures
Sec. 3 Electrical Adjustment
Sec. 4 Block Diagram, Schematic Diagrams and Circuit Board Diagrams
Sec. 5 Exploded Views & Replacement Parts List



Specifications

Power supply:	DC 12 V (supplied by camera)
Power consumption:	3.3 W

Picture tube:
2-inch high-resolution monochrome picture tube
Image system:
1080 lines, 59.94 Hz
External adjustment controls:
Controls (BRIGHT, CONTRAST, PEAKING)
Switches (TALLY HIGH/OFF/LOW, ZEBRA ON/OFF)
Allowable temperature range:
32°F to 104°F (0°C to 40°C)
Allowable humidity range:
85% or less (no condensation)
External dimensions (W×H×D):
9 1/2″×3 3/16″×8 1/8″ (240×80×206 mm)
Weight:
2.112 lb (960 g)

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⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

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SAFETY PRECAUTIONS

GENERAL GUIDELINES

1. When servicing, observe the original lead dress. If a short circuit is found, replace all parts which have been over-heated or damaged by the short circuit.
2. After servicing, see to it that all the protective devices such as insulation barriers, insulation papers shields are properly installed.
3. After servicing, make the following leakage current checks to prevent the customer from being exposed to shock hazards.

LEAKAGE CURRENT COLD CHECK

1. Unplug the AC cord and connect a jumper between the two prongs on the plug.
2. Measure the resistance value, with an ohm meter, between the jumpered AC plug and each exposed metallic cabinet part on the equipment such as screwheads, connectors, control shafts, etc. The resistance value must be more than 5MΩ.

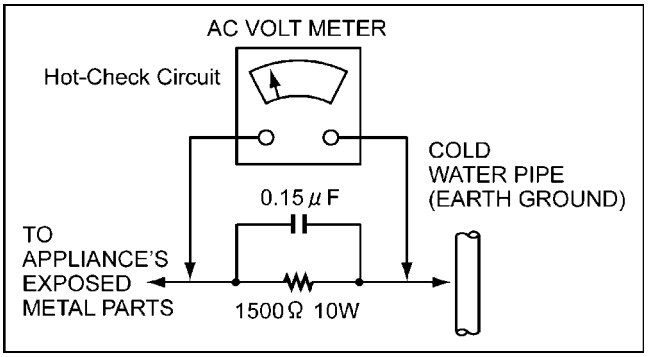

Figure1

LEAKAGE CURRENT HOT CHECK (See Figure 1)

1. Plug the AC cord directly into the AC outlet.
   Do not use an isolation transformer for this check.
2. Connect a 1.5KΩ, 10W resistor, in parallel with a 0.15μ F capacitor, between each exposed metallic part on the set an a good earth ground such as a water pipe, as shown in Figure1.
3. Use an AC voltmeter, with 1000 ohms/volt or more sensitivity, to measure the potential across the resistor.
4. Check each exposed metallic part, and measure the voltage at each point.
5. Reverse the AC plug in the AC outlet repeat each of the above measurements.
6. The potential at any point should not exceed 0.15 volts RMS. A leakage current tester (Simpson Model 229 equivalent) may be used to make the hot checks, leakage current must not exceed 0.1 milliamp. In case a measurement is outside of the limits specified, there is a possibility of a shock hazard, and the equipment should be repaired and rechecked before it is returned to the customer.

ELECTROSTATICALLY SENSITIVE (ES) DEVICES

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically sensitive (ED) Devices. Examples of typical ES devices are integrated circuits and some field-effect transistors and semiconductor “chip” components. The following techniques should be used to help reduce the incidence of component damage caused by static electricity.

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground.
   Alternatively, obtain and wear a commercially available discharging wrist trap device, which should be removed for potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as alminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded tip soldering iron to solder or unsolder ES devices.
4. Use only an anti-static solder removal device classified as “anti-static” can generate electrical charges sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it.
   (most replacement ES devices are package with leads electrically shorted together by conductive foam, alminum foil or comparable conductive material).
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.
   CAUTION : Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.
8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise hamless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ES device).

X-RADIATION

WARNING

1. The potential source of X-radiation in EVF sets is the High Voltage section and the picture tube.
2. When using a picture tube test jig for service, ensure that jig is capable of handling 10kV without causing X-Radiation.

Note : It is important to use an accurate periodically calibrated high voltage meter.

3. Measure the High Voltage. The meter (electric type) reading should indicate 2.5kV,±0.15kV. If the meter indication is out of tolerance, immediate service and correction is required to prevent the possibility of premature component failure. To prevent an X-Radiation possibility, it is essential to use the specified picture tube.

WARNING:

TO REDUCE THE RISK OF FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE.

Operating precaution

Operation near any appliance which generates strong magnetic fields may give rise to noise in the video and audio signals. If this should be the case, deal with the situation by, for instance, moving the source of the magnetic fields away from the unit before operation.

FCC Note:

This device complies with Part 15 of the FCC Rules. To assure continued compliance follow the attached installation instructions and do not make any unauthorized modifications.

This equipment has been tested and found to comply with the limits for a class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Caution:

- O The interior of this product contains high-voltage components. Do not disassemble the product.
- O Be careful not to point the eyepiece directly at the sun.

indicates safety information.

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SECTION 1

OPERATING INSTRUCTIONS

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Panasonic

ENGLISH

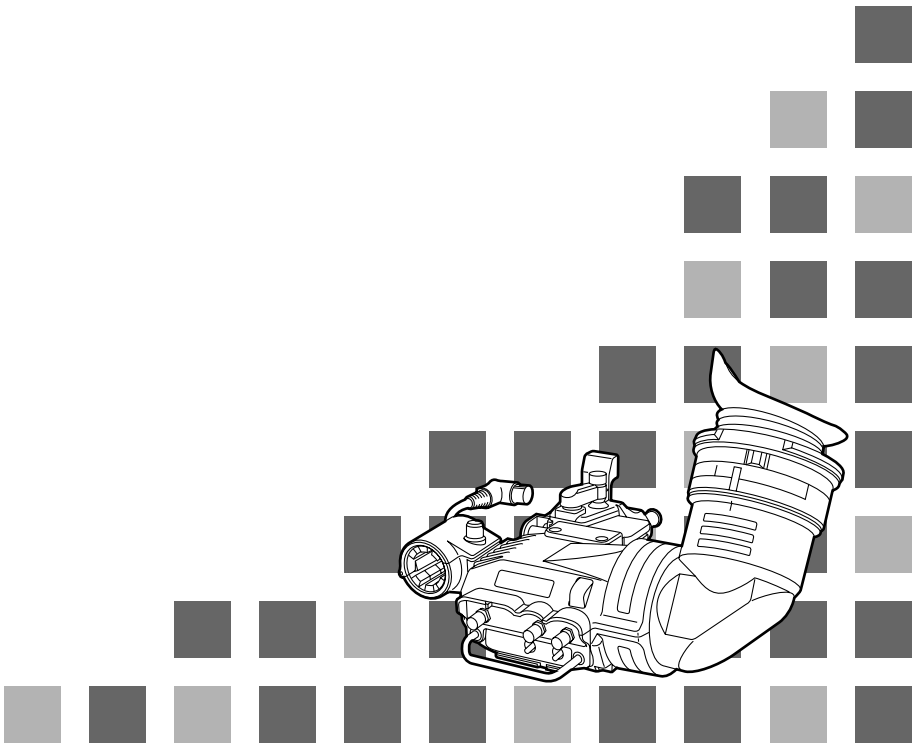
FRANÇAIS

日本語

2″ Electronic HD View Finder

AJ-HVF20P

Operating Instructions



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Features

- The high-resolution CRT delivers superb picture sharpness, making focusing easier.
- The low-flare CRT makes the screen clear and easy on the eyes.
- The large eyepiece aperture makes it possible to see the screen even when holding the viewfinder at some distance from your eye.
- The eyepiece is easily detachable.
- Easy, one-touch left-right and forward-backward position adjustment.

Specifications

Power supply:	DC 12 V (supplied by camera)
Power consumption:	3.3 W

Picture tube:
2-inch high-resolution monochrome picture tube

Image system:
1080 lines, 59.94 Hz

External adjustment controls:
Controls (BRIGHT, CONTRAST, PEAKING)
Switches (TALLY HIGH/OFF/LOW, ZEBRA ON/OFF)

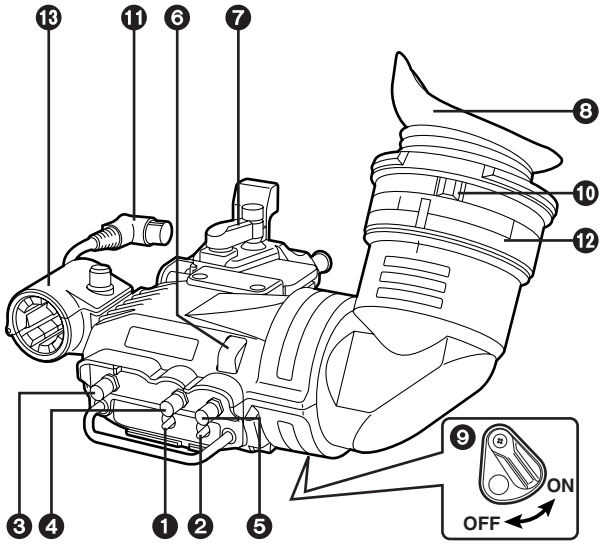
Allowable temperature range:
32°F to 104°F (0°C to 40°C)

Allowable humidity range:
85% or less (no condensation)

External dimensions (W×H×D):
9 1/2″×3 3/16″×8 1/8″ (240×80×206 mm)

Weight:
2.112 lb (960 g)

Parts and Their Functions



❶ ZEBRA (Zebra Pattern) Switch

Displays a zebra pattern inside the viewfinder.

ON: Displays a zebra pattern.

OFF: No zebra pattern displayed.

The details of the display, such as the type of zebra pattern, will differ depending on the camera used with the viewfinder. Refer to the instruction manual of the camera for details.

❷ TALLY Switch

Controls the front tally lamp.

HIGH: Makes the front tally lamp brighter.

OFF: Turns the front tally lamp off.

LOW: Makes the front tally lamp dimmer.

❸ PEAKING Knob

Adjusts the outlines of the images in the viewfinder to make focusing easier. The setting of this control has no effect on the output signal of the camera.

❹ CONTRAST Knob

Adjusts the contrast of the screen inside the viewfinder. The setting of this control has no effect on the output signal of the camera.

❺ BRIGHT (Brightness) Knob

Adjusts the brightness of the screen inside the viewfinder. The setting of this control has no effect on the output signal of the camera.

❻ Front Tally Lamp

Lights when the VTR is recording and the TALLY switch is set to HIGH or LOW. Also, flashes on and off as a warning indication, in the same manner as the REC lamp, inside the viewfinder.
The brightness of the front tally lamp is controlled by the setting of the TALLY switch (HIGH or LOW).

❼ Viewfinder Forward-Backward/Left-Right Position Clamp Lever

Loosen this lever to adjust the viewfinder position in the forward, backward, right or left direction.

❽ Eyepiece

❾ Back Tally Lamp

Lights when the VCR is recording. Also, flashes on and off as a warning indication, in the same manner as the REC lamp inside the viewfinder.
The back tally lamp is hidden when the lever is in the OFF position.

❿ Diopter Adjustment Ring

Adjust this control to match the vision of the person using the camera so that the image on the screen in the viewfinder is as clear as possible.

⓫ Connection Plug

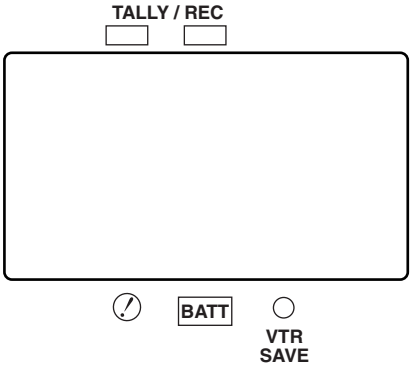
⓬ Lock Ring

⓭ Microphone Holder

Parts and Their Functions

Internal LEDs

The lamp and picture tube indications will differ depending on the camera used with the viewfinder.
Refer to the instruction manual of the camera for details.



Adjusting the Viewfinder

Adjusting the Mounting Height of the Viewfinder

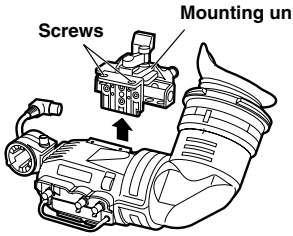
The mounting height of the viewfinder can be adjusted using the method described below.

Adjust the height of the mounting unit as required.

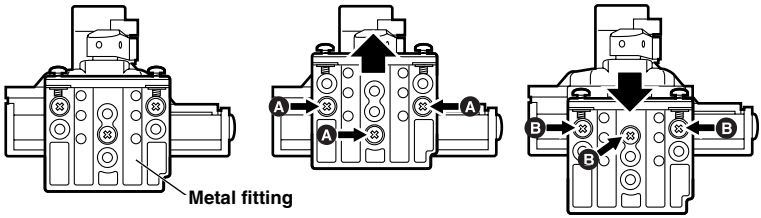
- At the time of shipping, the mounting height is set for use with the AJ-HDC10A and AJ-HDC20A models.

● Adjusting the height of the mounting unit

1. Detach the two screws, the detach the mounting unit.

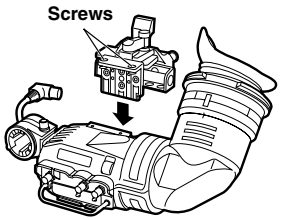


2. Replace the three screws in the positions indicated as Ⓐ or Ⓑ from the present positions and change the position of the metal fitting.



Re-fix the metal fitting by fastening the screws together with the spring washer.

3. Secure the mounting unit in place with the two screws.



Adjusting the Viewfinder

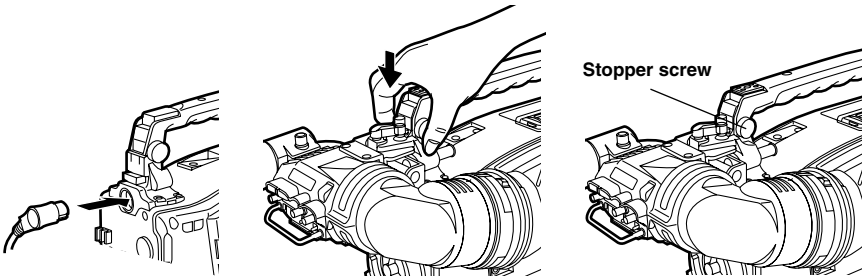
Mounting the Viewfinder

1. Confirm that the POWER switch of the camera is “OFF”.

2. Insert the plug into the connection jack of the viewfinder.
<Note>
Be sure to insert the plug all the way into the connection jack.

3. Push the viewfinder down into place.

4. Tighten the stopper screw firmly.

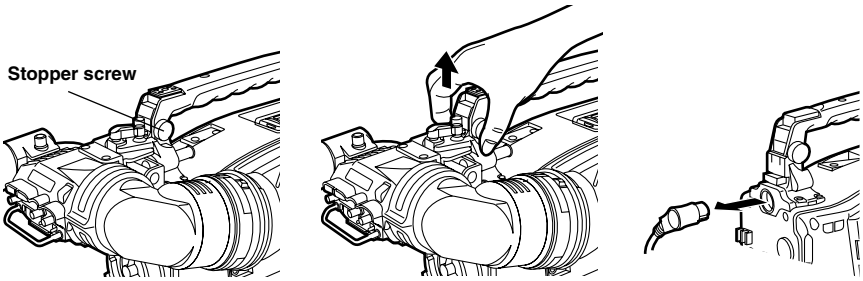


Detaching the Viewfinder

1. Confirm that the POWER switch of the camera is “OFF”.

2. Loosen the stopper screw and detach the viewfinder by pulling it straight up.
<Note>
Use both hands to detach the viewfinder. The viewfinder may not detach smoothly with one hand, resulting in damage to the viewfinder.

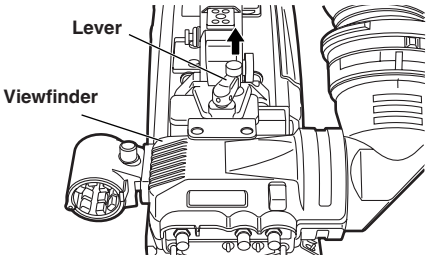
3. Disconnect the connection jack from the viewfinder cable connector.



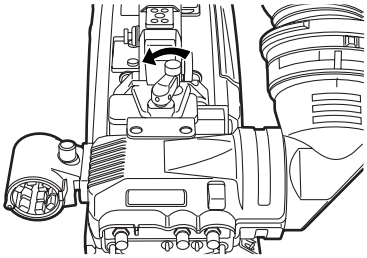
Adjusting the Viewfinder

Position Adjustment

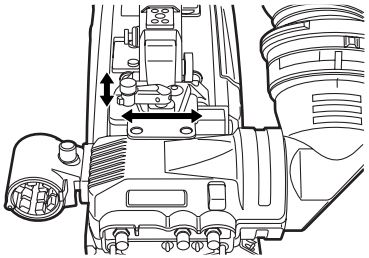
1. Lift up the viewfinder forward-backward/left-right position clamp lever to disengage the lock.



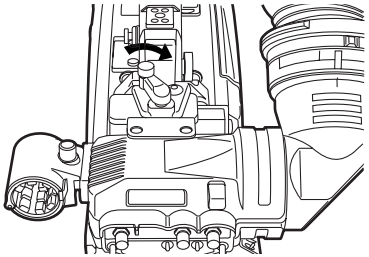
2. Loosen the viewfinder forward-backward/left-right position clamp lever.



3. Adjust the position of the viewfinder by moving it forward, backward, left or right.



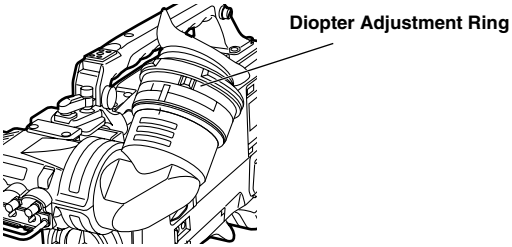
4. Return the viewfinder forward-backward/left-right position clamp lever to the locked position.



Adjusting the Viewfinder

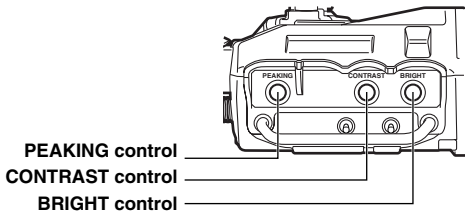
Diopter Adjustment

1. Set the POWER switch of the camera to “ON”. A picture will appear in the viewfinder.
2. Turn the diopter adjustment ring to adjust the diopter so that the viewfinder picture can be clearly seen.



Screen Adjustment
Adjust the condition of the viewfinder screen.

Brightness: Adjust the BRIGHT control.
Contrast: Adjust the CONTRAST control.
Contour: Adjust the PEAKING control.



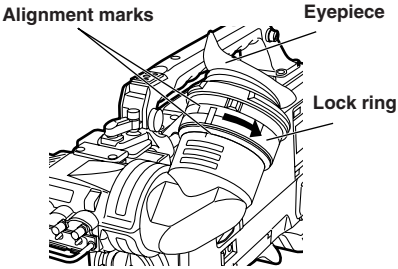
1. Set the POWER switch of the camera to “ON”.
2. Set the OUTPUT switch of the camera to “BAR”.
3. Turn the viewfinder BRIGHT and CONTRAST controls to adjust the picture brightness and contrast.
   Turning the PEAKING control makes the picture appear sharper.
   A sharper picture facilitates focusing the lens.

Adjusting the Viewfinder

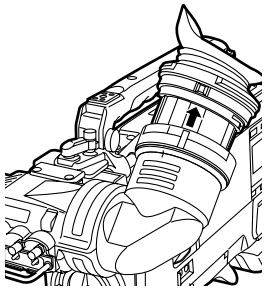
Detaching the Eyepiece
If dust has adhered to the CRT screen or mirror, detach the eyepiece and remove it.

<Note>
Do not wipe the mirror surface under any circumstances as it has been specially treated. Dust which has adhered to the mirror should be blown away with a blower, etc.

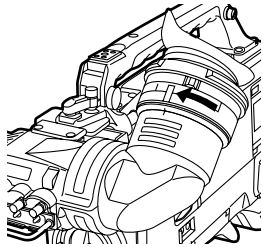
1. Turn the lock ring as far as possible in the clockwise and counterclockwise directions to line up the alignment marks on the lock ring and viewfinder barrel.



2. Detach the eyepiece.



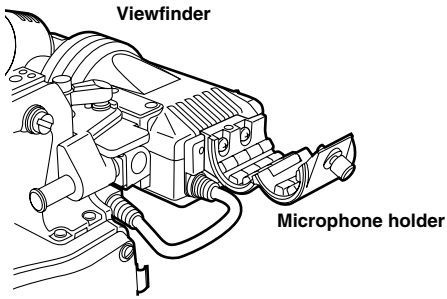
Remounting the Eyepiece
1. Line up the alignment marks on the lock ring and the viewfinder barrel and slide the eyepiece back into place.
2. Turn the lock ring clockwise as far as the ◄LOCK position.



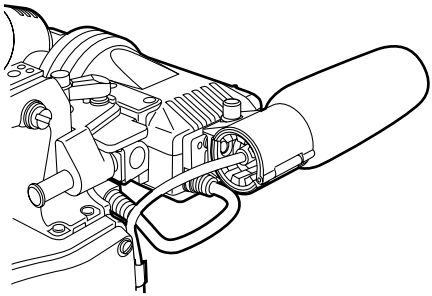
Mounting the Microphone

Follow the steps below to install the AJ-MC700P microphone kit (sold separately).

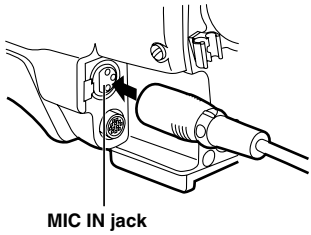
1. Open the microphone holder.



2. Mount the microphone.



3. Plug the microphone connector cable into the MIC IN jack.



Panasonic

PANASONIC BROADCAST & DIGITAL SYSTEMS COMPANY
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SECTION 2

DISASSEMBLY PROCEDURES

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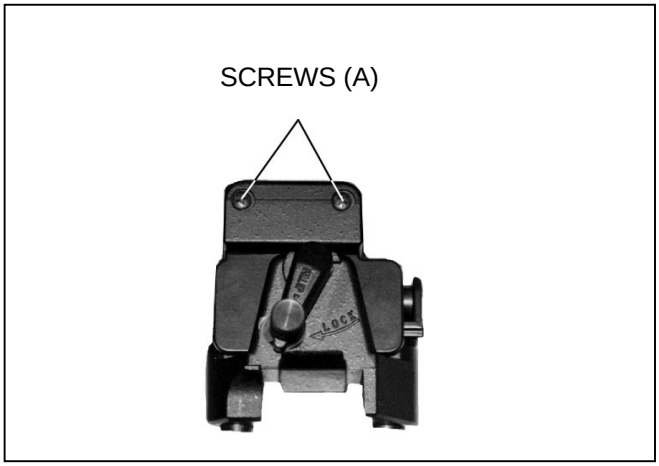
3. Removal of Eyepiece Rubber DIS-1
4. Removal of Eyepiece Unit..... DIS-2
5. Removal of Upper Cover DIS-2
6. Removal of CRT Unit..... DIS-2
7. Removal of SUB 1 Board..... DIS-3
8. Removal of SUB 2 Board..... DIS-3
9. Removal of MAIN Board DIS-3
10. Removal of Guard Bar DIS-3
11. Removal of LED Board DIS-4
12. Removal of Back-tally Base DIS-4

Disassemble Procedure

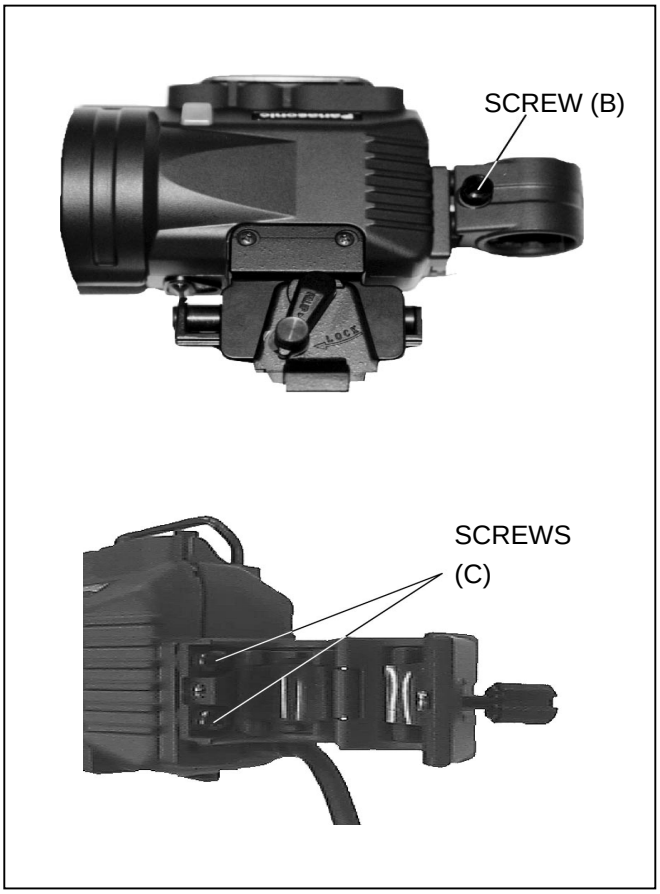
1. Removal of Mounting Unit

1. Unscrew 2 screws (A) so that the mounting unit can be removed.



2. Removal of Microphone Holder

1. Loosen screw (B) and then open the Microphone holder.
2. Unscrew 2 screws (C) so that the Microphone holder can be removed.

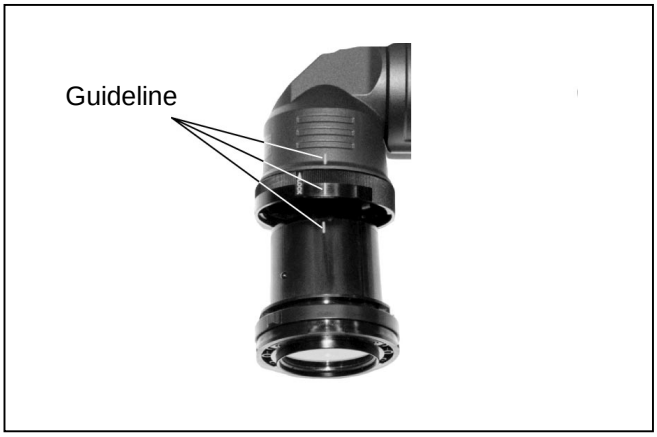


3. Removal of Eyepiece Rubber

1. Tear off the points of Eyepiece rubber (A) as shown below.

4. Removal of Eyepiece Unit

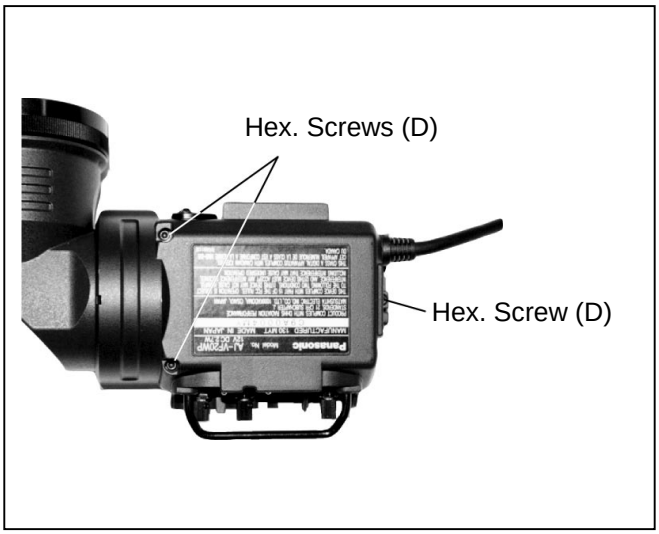
1. Turn the Lock ring to counter clockwise.
2. Pull out the Eyepiece Unit.



NOTE: For assembling the Eyepiece Unit, make sure each Guideline.

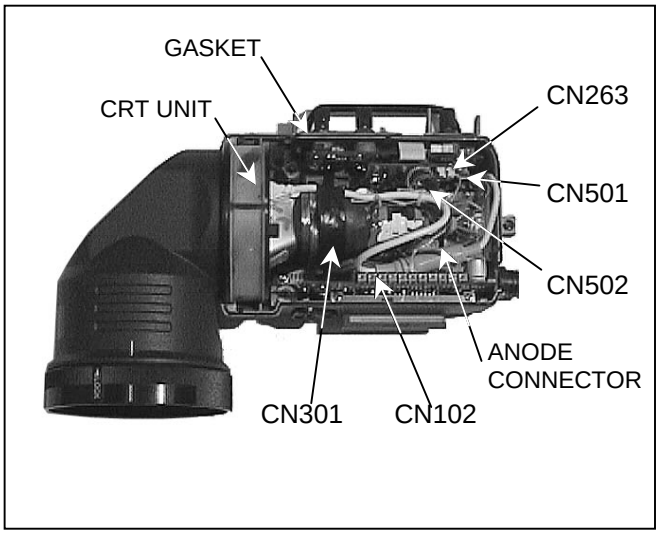
5. Removal of Upper Cover

1. Loosen 3 hex. screws (D) so that the Upper cover can be removed.



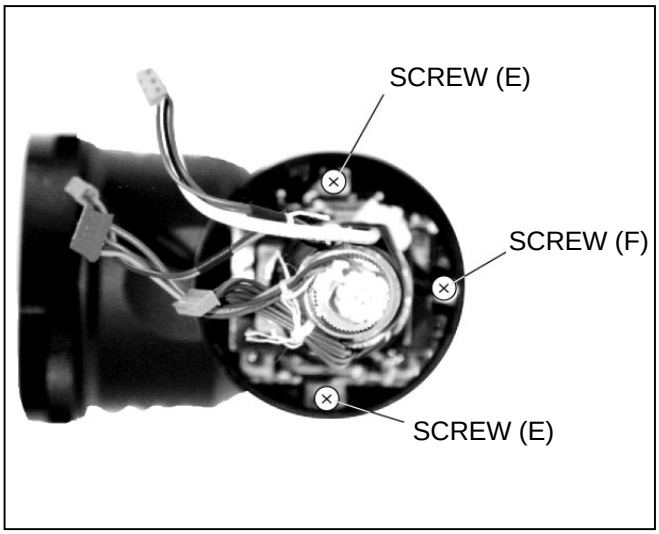
6. Removal of CRT Unit

1. Disconnect the CN102 on SUB 1 board.
2. Disconnect the CN263 on SUB 3 board.
3. Disconnect the CN301 on MAIN board and “Anode Connector” so that the CRT Unit (with LENS pipe) can be removed.

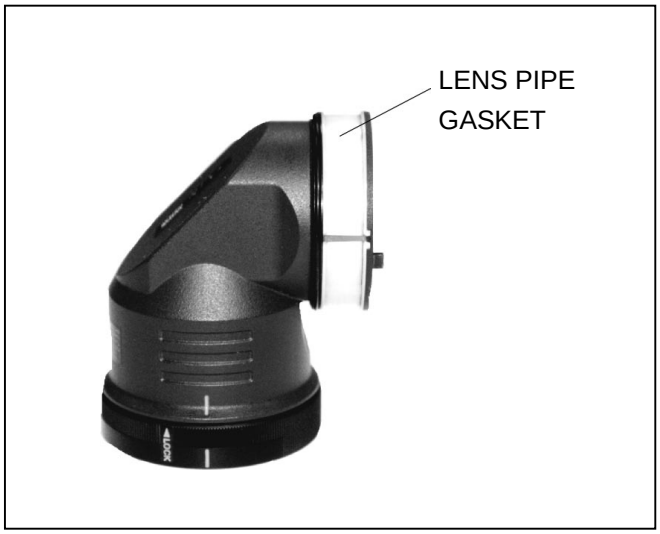


NOTE: If “GASKET” is deteriorated, replace “GASKET”.

4. Unscrew 3 screws (E), (F) so that the CRT Unit can be removed from LENS pipe.



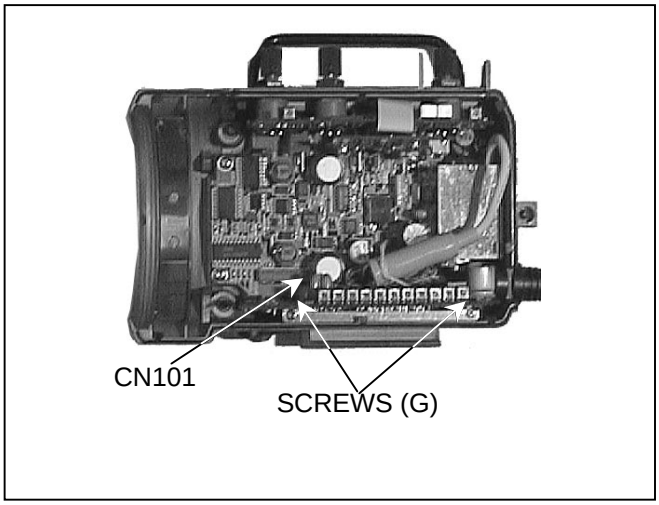
CAUTION: Do not wipe the surface of reflecting mirror installed in LENS pipe because the mirror is coated.
To clean the mirror, blow dust.



NOTE: If “LENS PIPE GASKET” is deteriorated, replace “LENS PIPE GASKET”.

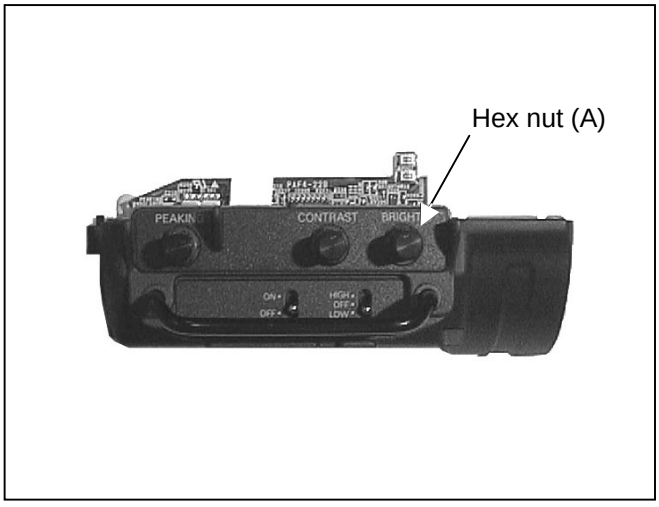
7. Removal of SUB1 Board

1. Disconnect CN101 on SUB1 Board.
2. Unscrew 2 screws (G) so that the SUB 1 Board can be removed.



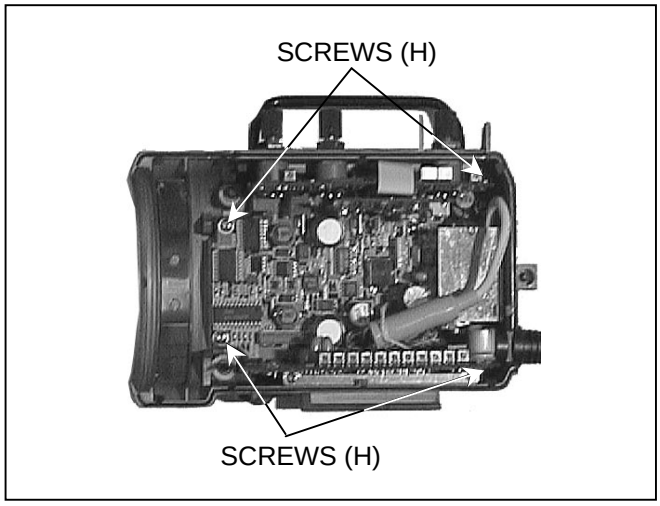
8. Removal of SUB2 Board

1. Unscrew hex screw fixing all front knobs. (PEAKING, CONTRAST and BRIGHT knob)
2. Unscrew hex nut (A) and then pull out the each front knob so that the SUB 2 board can be removed.



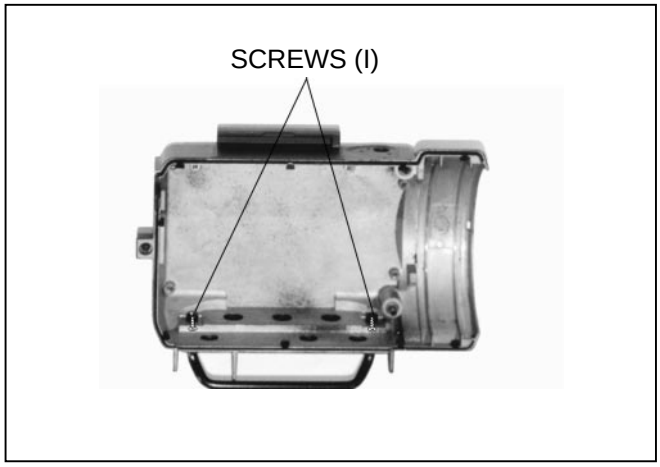
9. Removal of MAIN Board

1. Disconnect CN1 on MAIN Board so that the EVF cable can be removed.
2. Unscrew 4 screws (H) so that the MAIN Board can be removed.



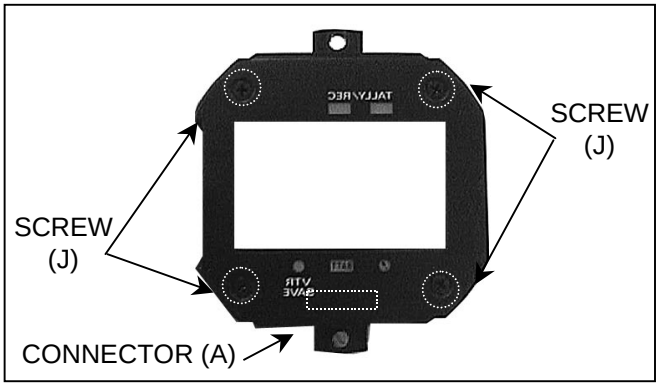
10. Removal of Guard Bar

1. Unscrew 2 screws (I) so that the Guard bar can be removed.

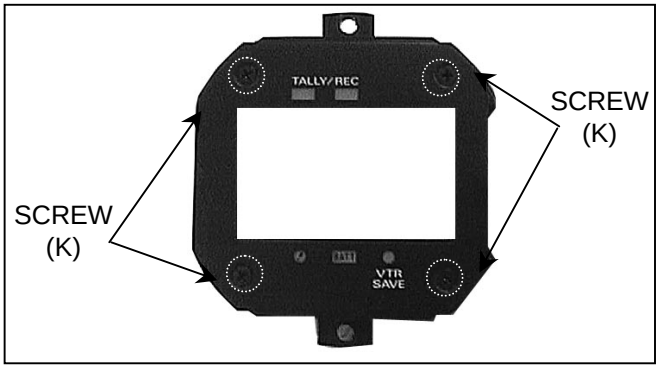


11. Removal of LED Board

1. Disconnect the connector (A) on Indicate plate.
2. Unscrew 4 screws (J) so that the CRT Assembly can be removed.

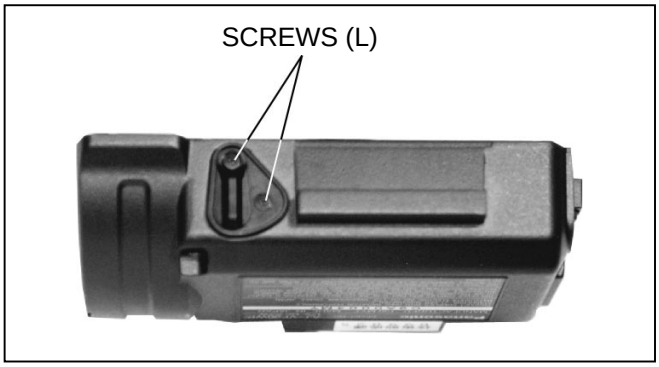


3. Unscrew 4 screws (K) so that the LED Board can be removed.



12. Removal of Back-tally Base

1. Unscrew 2 screws (L) so that the Back-tally base can be removed.



NOTE: If “GASKET” installed behind of the Back-tally base unit is deteriorated, replace “GASKET”.

NOTE: For assembling the parts, take opposite steps of each disassemble procedure.

MEMO

SECTION 3

ELECTRICAL ADJUSTMENT

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1. Preparation ELE-1
   1-1. Recommended Measurement Equipment (M.EQ) & Servicing Fixtures ELE-1
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Electrical Adjustment Procedures

1. Preparation

1-1. Recommended Measurement Equipment (M.EQ) & Servicing Fixtures

No.	NAME	MODEL NO. (Example)	REMARK
1	HD Camera (-recorder)	AJ-HDC20A	EVF Connector 20pin type
2	Digital Volt Meter (D.V.M)		
3	Frequency Counter		
4	Oscilloscope		
5	Resolution Chart		Charts specification as follows *16:9 aspect type *Circles picture described at each corner
6	EHV (Extra High Voltage) Prove		Use for “2-6. Focus Adj.”
7	Screwdriver, Hex wrench		Please use Screwdrivers type of made by plastic.

1-2. Preparation for adjustment

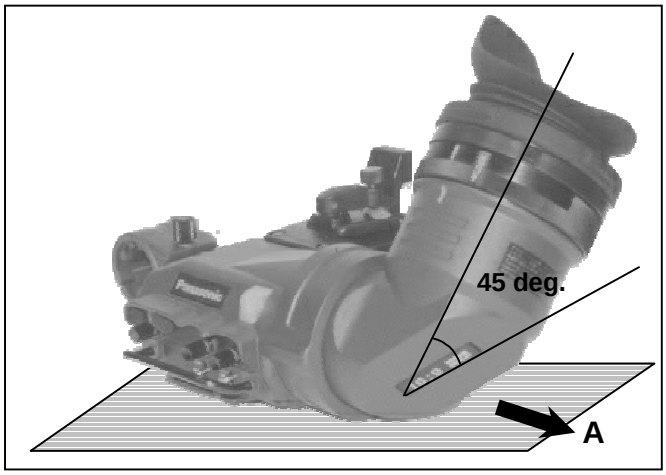
Execute an adjustment under the following condition for precise adjustment.

1. Set Viewfinder horizontally and CRT surface to (A) as follows.

   *Part of Northern Hemisphere: A is North direction

   *Part of Southern Hemisphere: A is South direction

2. Adjust Angle of Eyepiece to 45 degrees as shown below.



Without specific instruction, set control knobs as follows.

PEAKING knob : Minimum level

CONTRAST knob : Center

BRIGHT knob : Center

2. Adjustment procedures

2-1. Power Supply Voltage Adjustment

Board	MAIN BOARD, SUB2 BOARD
Spec	9.5V+/-0.05V
TP	IC201 4pin [SUB2 BOARD]
Adjust	RV401 (+9.5V ADJ.) [MAIN BOARD]
M.EQ	D.V.M

1. Adjust RV401 so that the voltage at IC201 4pin is within the specification.

2-2. V Hold Adjustment

Board	SUB1 BOARD
Spec	55Hz+/-0.5Hz
TP	CN102 2pin
Adjust	RV105 (V-HOLD)
M.EQ	Frequency Counter

1. Adjust RV105 so that the Frequency at CN102 2pin is within the specification.

2-3. H Hold Adjustment

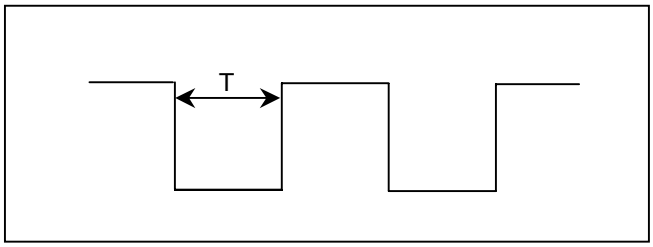
Board	MAIN BOARD, SUB1 BOARD
Spec	33.75kHz+/-0.05kHz
TP	CN501 2pin [MAIN BOARD]
Adjust	RV103 (H-HOLD) [SUB1 BOARD]
M.EQ	Frequency Counter

1. Adjust RV103 so that the Frequency at CN501 2pin is within the specification.

2-4. H Duty Adjustment

Board	SUB1 BOARD
Spec	T = 2.75 us+/-0.25us
TP	CN101B 7pin
Adjust	RV104 (H-DUTY)
M.EQ	Oscilloscope

1. Set the BRIGHT, CONTRAST and PEAKING knobs to Minimum level.
2. Turn RV104 fully counter clockwise.
3. Adjust RV104 so that the duty (T) at CN101B 7pin is within the specification.

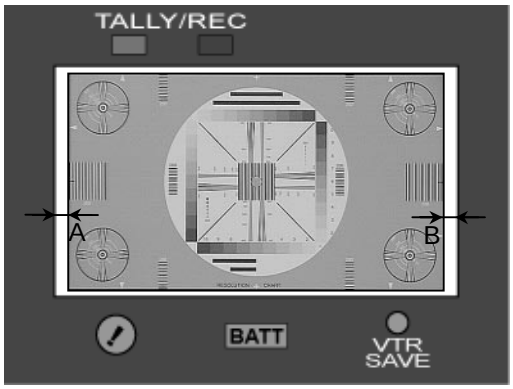


NOTE:
If the duty (T) is adjusted to 2.5us or less, High voltage protection circuits may work.
In that case, turn power off and turn RV104 fully counter clockwise then turn power on again.

2-5. H Picture Position Adjustment

Board	SUB1 BOARD
Spec	CENTER (A = B)
Chart	Resolution chart
TP	EVF picture, TV Monitor
Adjust	RV101 (H-SHIFT)

1. Connect VIDEO OUT of Camera (-recorder) to TV Monitor.
2. Shoot “Resolution chart” then adjust zoom and focus so that the full-size picture is displayed on TV Monitor.
3. Adjust RV101 so that the picture horizontal position on screen of EVF is within the specification.



2-6. Focus Adjustment

Board	SUB1 BOARD
Spec	6.0kV+/-0.1kV
Chart	Resolution chart
TP	HV Connector (FBT side)
Adjust	RV109 (FOCUS) [SUB1 BOARD]
M.EQ	D.V.M (Use EHV probe)

1. Shoot “Resolution chart” then adjust zoom and focus so that the full-size picture is displayed on screen of EVF.
2. Adjust RV109 so that the voltage is within the specification.

NOTE:

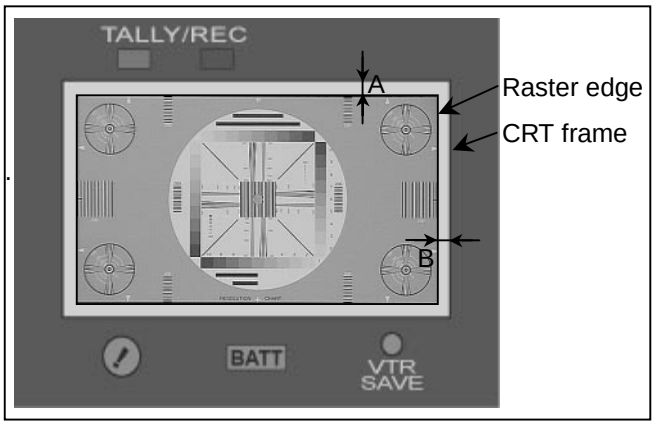
If “2-7 Raster size adjustment” is out of specification, focus adjustment may not be in specification. In this case turn RV110 (H-SIZE) fully counter clockwise then excute this adjustment again.

If focus voltage is too nigh, High voltage protection circuits may work. In this case turn power off and turn RV109 fully counter clockwise then turn power on again.

2-7. Raster Size Adjustment

Board	SUB1 BOARD
Spec	A= approx. 3mm, B= approx. 1mm
Chart	Resolution chart
TP	EVF screen
Adjust	RV110 (H-SIZE), RV106 (V-SIZE)

1. Shoot “Resolution chart” then adjust zoom and focus so that the full-size picture is displayed on screen of EVF.
2. Adjust RV106 so that the no picture portion “A” is within the specification.
3. Adjust RV110 so that the no picture portion “B” is within the specification.



2-8. Heater Voltage Adjustment

Board	MAIN BOARD
Spec	630mV+/-10mV (DC)
TP	TP22-TP23 (CN502 3pin-4pin)
Adjust	RV501 (HEATER V ADJ.)
M.EQ	D.V.M

1. Adjust RV501 so that the Heater voltage between TP22 and TP23 is within the specification.

NOTE:

Do not set Heater voltage more than “700mV” during adjustment.

2-9. V Center Adjustment

Board	SUB1 BOARD
Spec	Vertical position is Center
Chart	Resolution chart
TP	EVF screen
Adjust	RV112 (V-CENTER)

1. Shoot “Resolution chart” then adjust zoom and focus so that the full-size picture is displayed on screen of EVF.
2. Adjust RV112 so that the vertical picture position to center.

2-10. V Linearity Adjustment

Board	SUB1 BOARD
Spec	All circles at four corners of resolution chart are most round.
Chart	Resolution chart
TP	EVF screen
Adjust	RV108 (V-LIN)

1. Shoot “Resolution chart” then adjust zoom and focus so that the full-size picture is displayed on screen of EVF.
2. Adjust RV108 so that the “Circle” is most round on each corner of resolution chart.

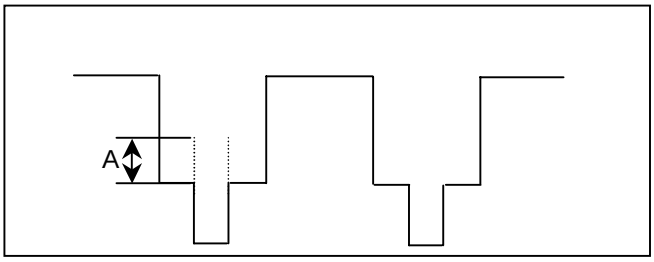
NOTE:

If V and H size need to be adjusted, excute “2-7 Raster size adjustment”.

2-11. Clamp Level Adjustment

Board	SUB2 BOARD
Spec	A = 10V+/-1V
TP	CN263 1pin (CRT G1 connector)
Adjust	RV202 (CLAMP LEVEL)
input	Camera Color bar
M.EQ	Oscilloscope

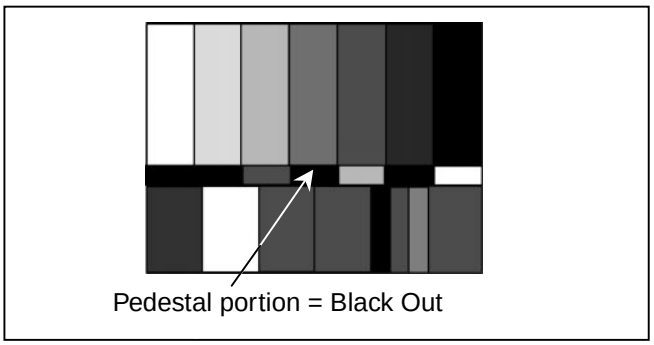
1. Set the Camera internal color bar to ON.
2. Set the knobs as shown below.
   BRIGHT knob : Center
   CONTRAST, PEAKING knob : Max
3. Adjust RV202 so that the peaking level “A” at CN263 1pin is within the specification.



2-12. Sub Brightness Adjustment

Board	SUB2 BOARD
Spec	Pedestal portion = Just black out
TP	EVF screen
Adjust	RV205 (SUB BRIGHTNESS)
input	Camera Color bar

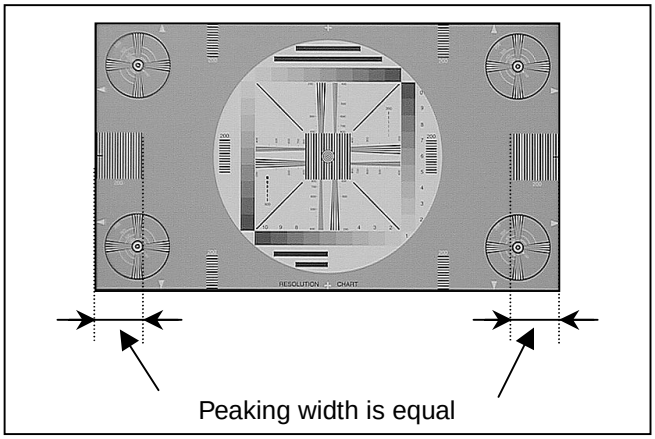
1. Set the Camera internal color bar to ON.
2. Set the BRIGHT, CONTRAST and PEAKING knobs to Minimum level.
3. Adjust RV205 so that the pedestal portion is changed from slightly light to dark (just black out).



2-13. Peaking Balance Adjustment

Board	SUB2 BOARD
Spec	Peaking level = left and right equal (Both sides on Resolution chart)
Chart	Resolution chart
TP	EVF screen
Adjust	RV203 (PEAKING BALANCE)

1. Set the Knobs as shown below.
   BRIGHT knob : Min
   CONTRAST knob : Center
   PEAKING knob : Max
2. Shoot “Resolution chart” then adjust zoom and focus so that the full-size picture is displayed on screen of EVF.
3. Adjust RV203 so that the Peaking width is equal.



SECTION 4

BLOCK DIAGRAM
SCHEMATIC DIAGRAMS
CIRCUIT BOARD DIAGRAMS

CONTENTS

BLOCK DIAGRAM

OVER ALL BLOCK DIAGRAM BLK-1

SCHEMATIC DIAGRAMS

SUB 1 SCHEMATIC DIAGRAM SCM001

SUB 2 SCHEMATIC DIAGRAM SCM002

SUB 3 SCHEMATIC DIAGRAM SCM003

LED SCHEMATIC DIAGRAM SCM004

SERIAL DATA CONV. (MAIN 1/3) SCHEMATIC DIAGRAM SCM005

POWER (MAIN 2/3) SCHEMATIC DIAGRAM SCM006

HORIZONTAL DEFLECTION (MAIN 3/3) SCHEMATIC DIAGRAM SCM007

CIRCUIT BOARD DIAGRAMS

MAIN P.C.BOARD (VEP20859A) CBA-1

SUB 1 P.C.BOARD (VEP20860A) CBA-1

SUB 2 P.C.BOARD (VEP20861A) CBA-1

SUB 3 P.C.BOARD (VEP20862A) CBA-1

IMPORTANT SAFETY NOTICE

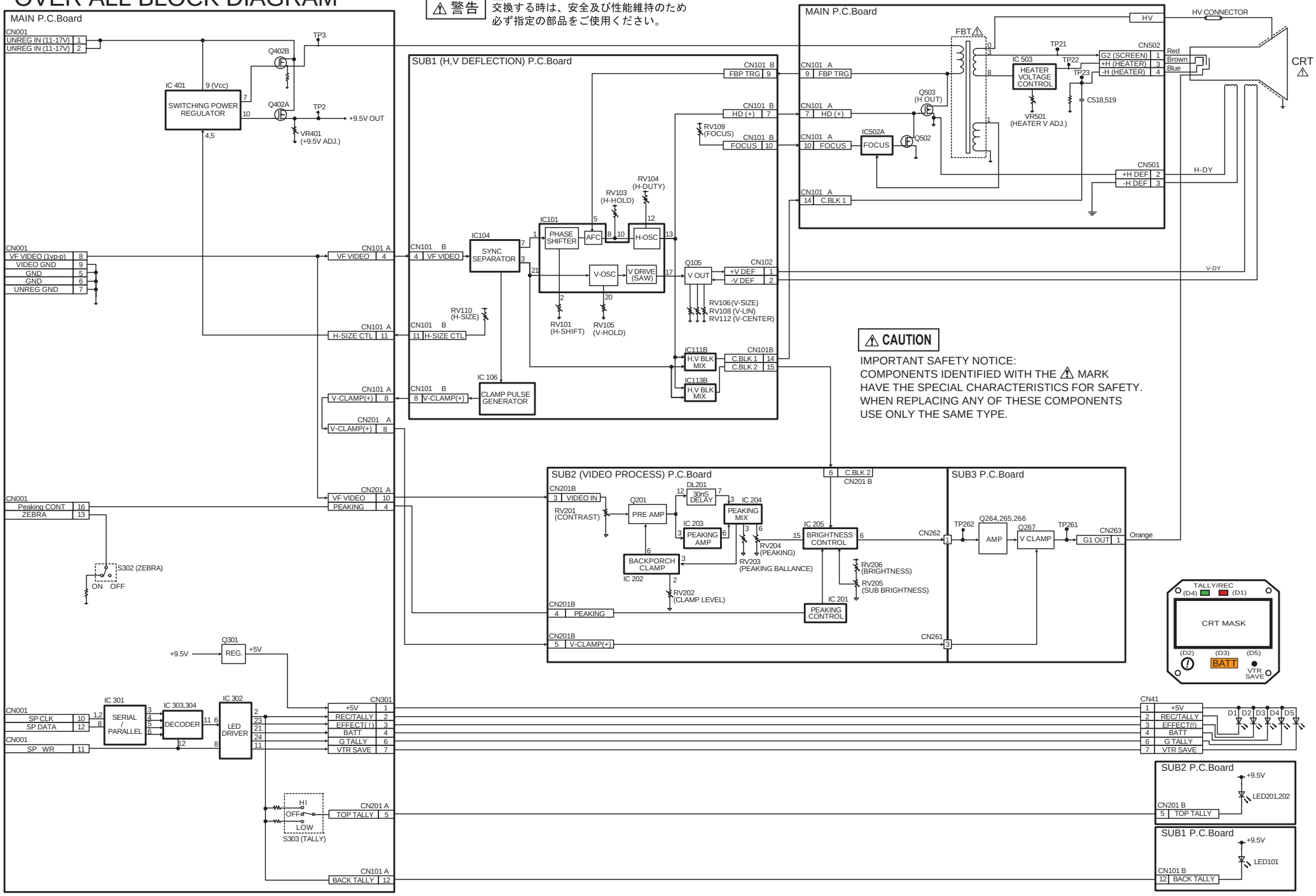
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS USE ONLY THE SAME TYPE.

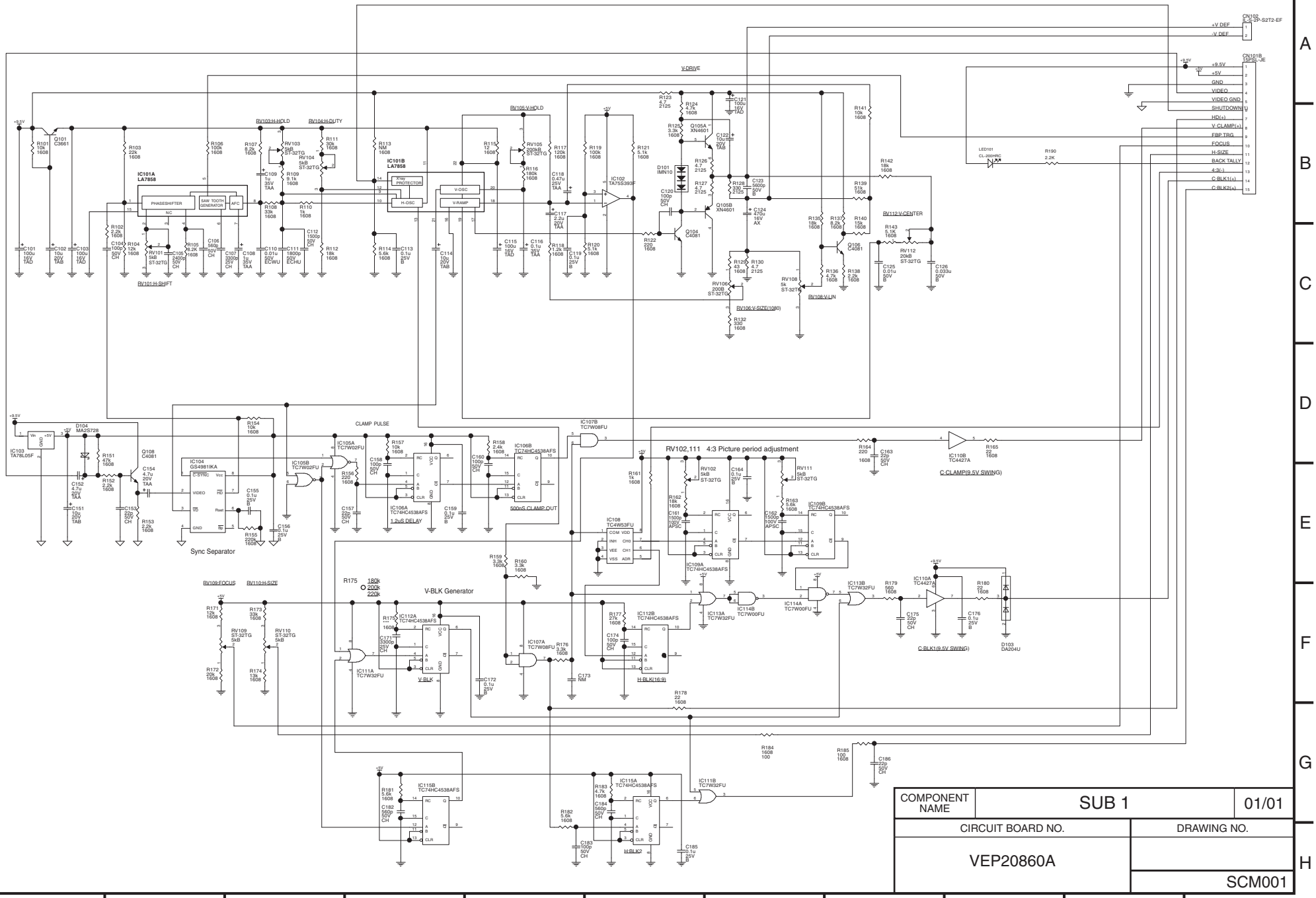
DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST.
AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WASPREPARED.

OVER ALL BLOCK DIAGRAM

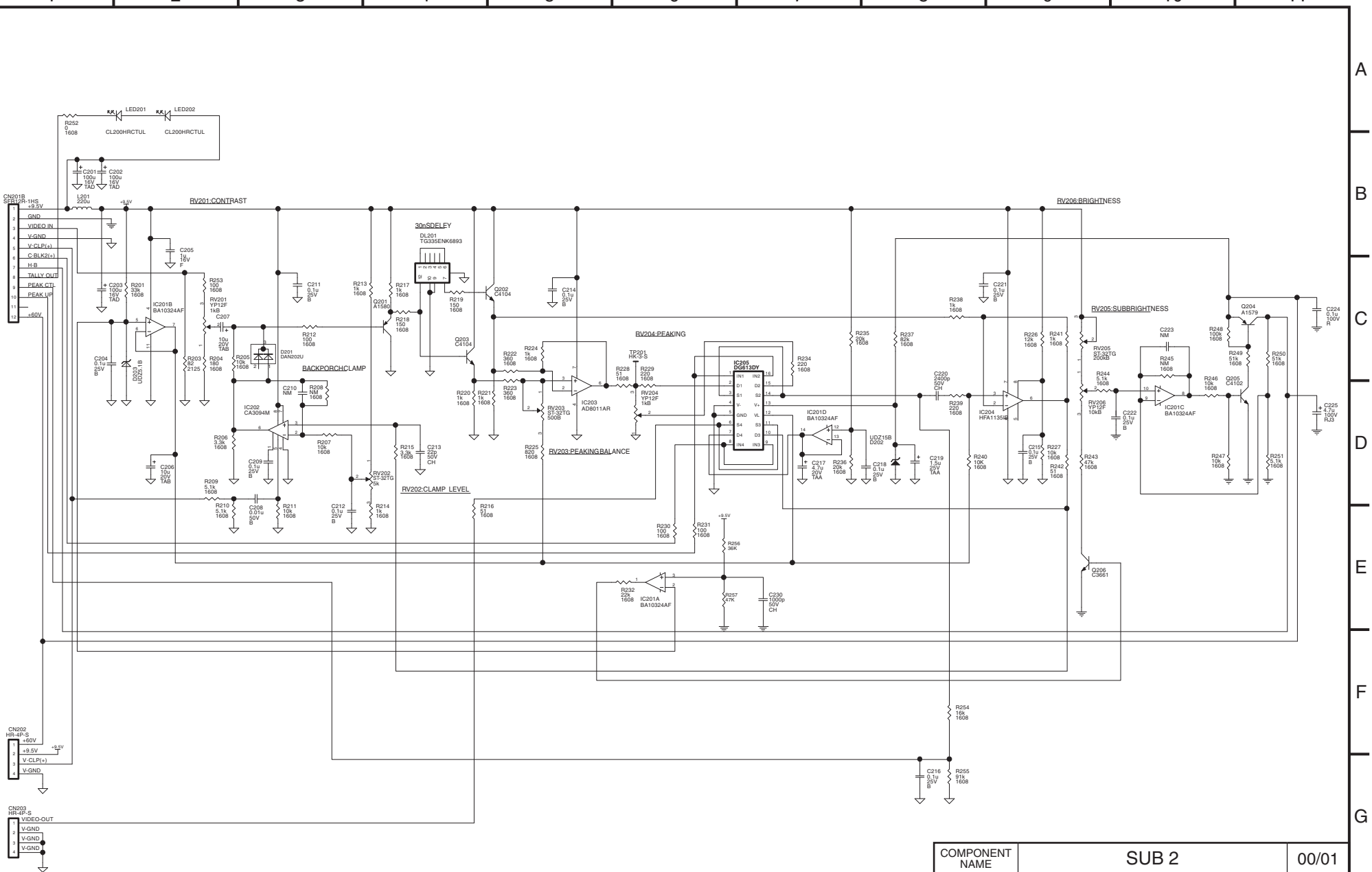
⚠ 警告

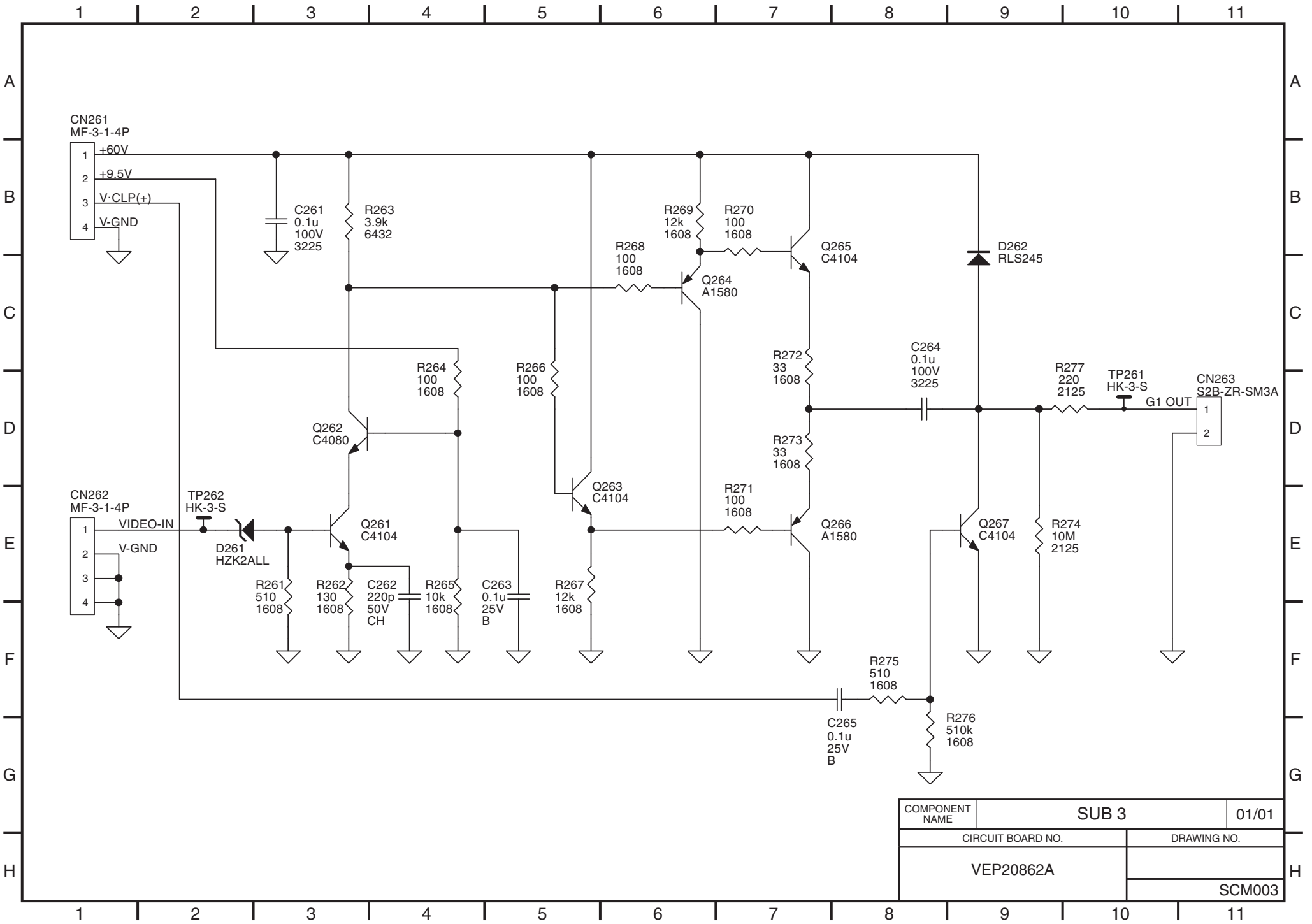
⚠印の部品は安全上重要な部品です。
交換する時は、安全及び性能維持のため
必ず指定の部品をご使用ください。



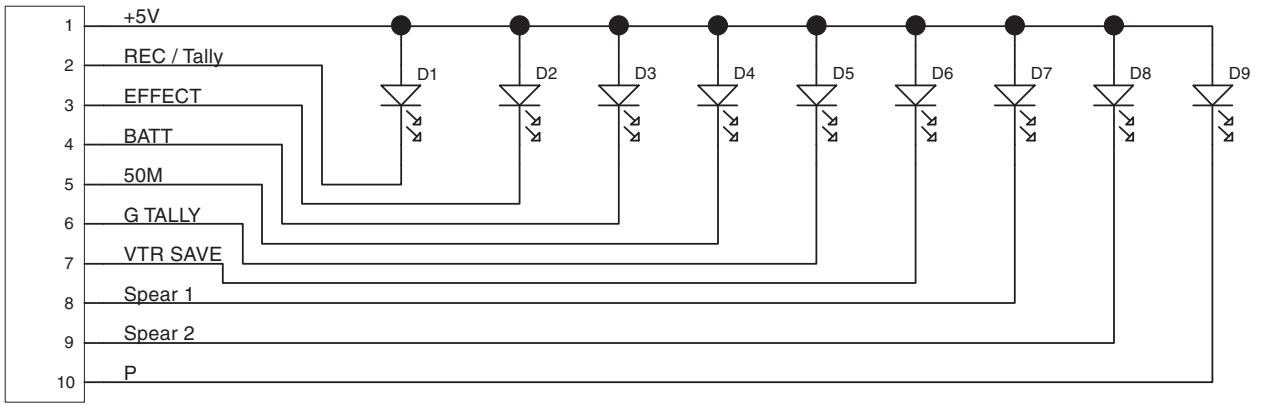


COMPONENT NAME	SUB 1	01/01
CIRCUIT BOARD NO.		DRAWING NO.
VEP20860A		SCM001


RV201:CONTRAST
RV206:BRIGHTNESS
RV205:SUBBRIGHTNESS
RV204:PEAKING
RV203:PEAKING BALANCE
RV202:CLAMP LEVEL
BACKPORCHCLAMP
30nSDELEY
LED201
LED202
CL200HRCTUL
CN201B
SCR12R-1HS
+9.5V
GND
VIDEO IN
V-GND
V-CLP(+)
C-BLK2(+)
H-B
TALLY OUT
PEAK CTL
PEAK UP
+60V
CN202
HR-4P-S
CN203
HR-4P-S
VIDEO-OUT
IC201B BA10324AF
IC201A BA10324AF
IC201C BA10324AF
IC201D BA10324AF
IC202 CA3094M
IC203 AD8011AR
IC204 HFA1135IB
IC205 DG613DY
DL201 TG335ENK6893
TP201 HK-3-S
D201 DAN202U
D203 UDZ5.1B
UDZ15B D202
Q201 A1586
Q202 C4104
Q203 C4104
Q204 A1579
Q205 C4102
Q206 C3661
RV201 YP12F 1kB
RV202 ST-32TG 5k
RV203 ST-32TG 500B
RV204 YP12F 1kB
RV205 ST-32TG 200kB
RV206 YP12F 10kB
COMPONENT NAME
SUB 2
00/01
CIRCUIT BOARD NO.
VEP20861A
DRAWING NO.
SCM002

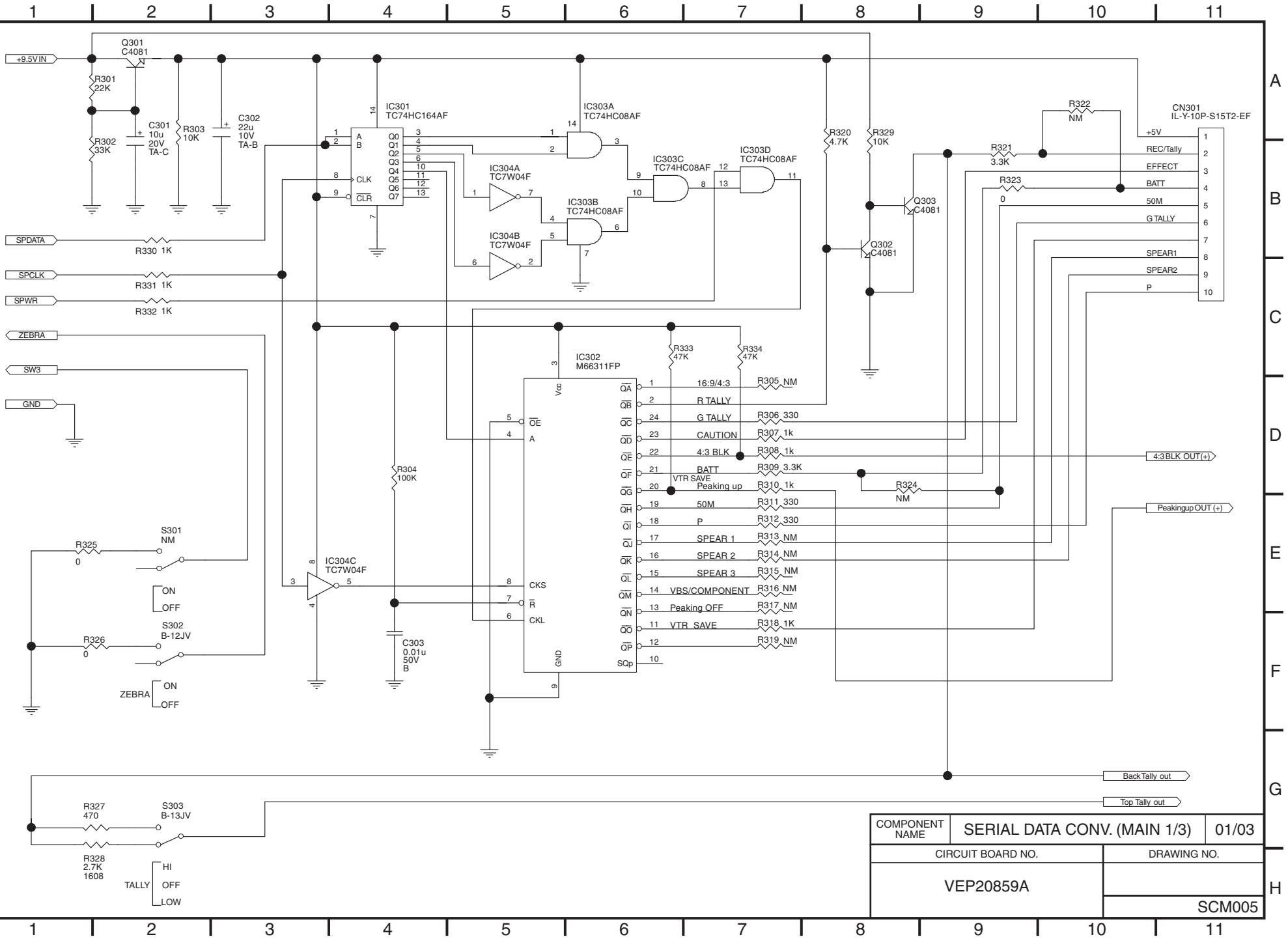

CN261
MF-3-1-4P
1 +60V
2 +9.5V
3 V·CLP(+)
4 V-GND
C261
0.1u
100V
3225
R263
3.9k
6432
R269
12k
1608
R270
100
1608
R268
100
1608
Q265
C4104
Q264
A1580
D262
RLS245
R264
100
1608
R266
100
1608
R272
33
1608
C264
0.1u
100V
3225
R277
220
2125
TP261
HK-3-S
G1 OUT
CN263
S2B-ZR-SM3A
1
2
Q262
C4080
R273
33
1608
CN262
MF-3-1-4P
1 VIDEO-IN
2 V-GND
3
4
TP262
HK-3-S
D261
HZK2ALL
Q263
C4104
R271
100
1608
Q261
C4104
Q266
A1580
Q267
C4104
R274
10M
2125
R261
510
1608
R262
130
1608
C262
220p
50V
CH
R265
10k
1608
C263
0.1u
25V
B
R267
12k
1608
R275
510
1608
C265
0.1u
25V
B
R276
510k
1608
COMPONENT NAME
SUB 3
01/01
CIRCUIT BOARD NO.
VEP20862A
DRAWING NO.
SCM003

CN41
IL-Y-10P-S15T2-EF

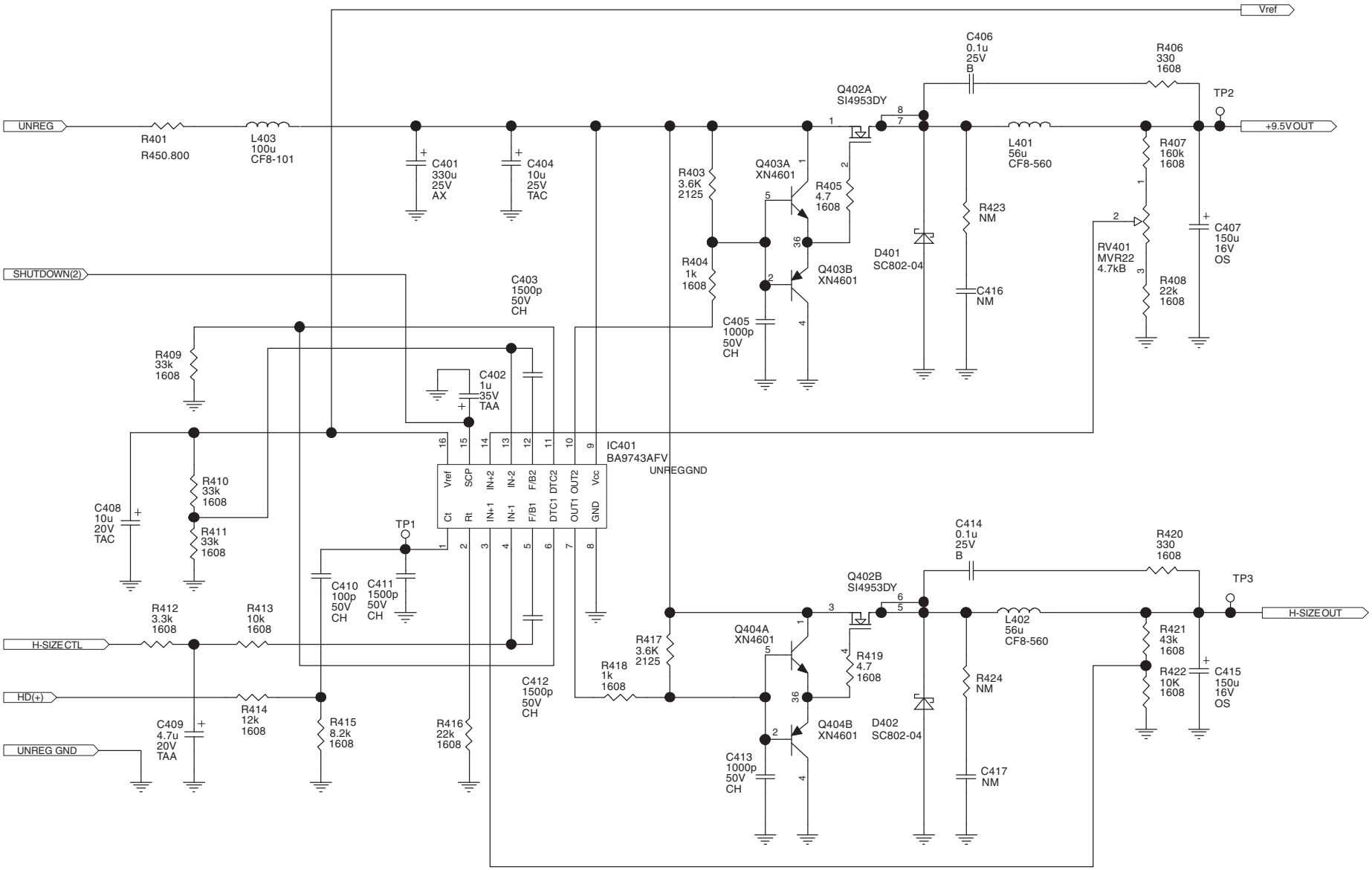


D1	REC/Tally	CL-150UR-CD-T
D2	EFFECT	CL-150D-CD-T
D3	BATT	CL-150UR-CD-T
D4	50M	CL-150UR-CD-T
D5	G TALLY	CL-150PG-CD-T
D6	VTR SAVE	CL-150D-CD-T
D7	SPEAR1	
D8	SPEAR2	
D9	P	

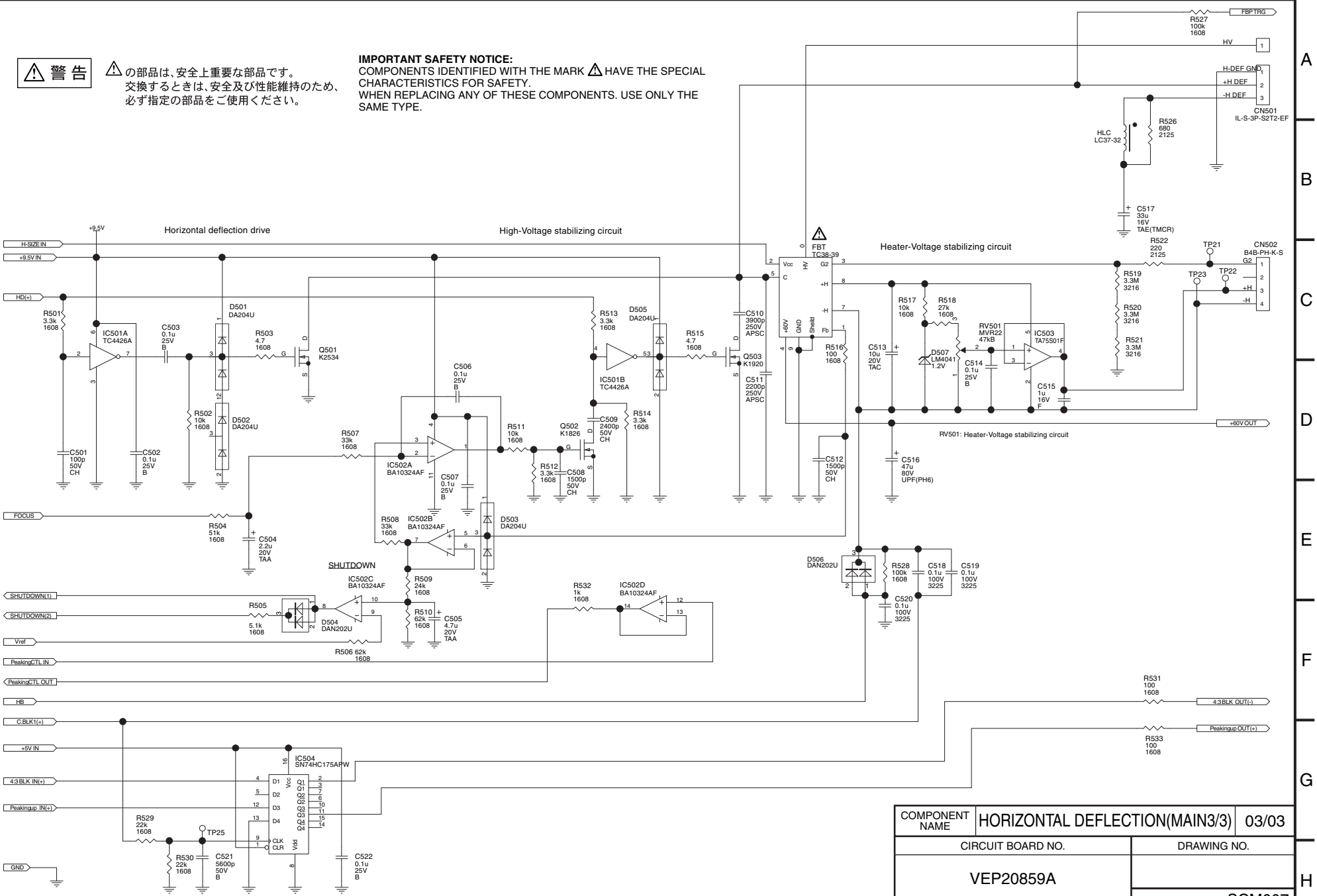
COMPONENT NAME	LED	01/01
CIRCUIT BOARD NO.		DRAWING NO.
VEP20860A		SCM004



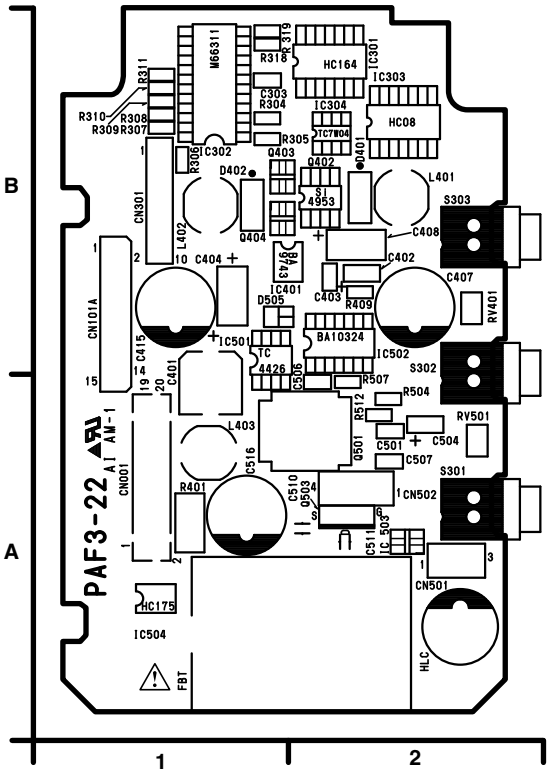
COMPONENT NAME	SERIAL DATA CONV. (MAIN 1/3)	01/03
CIRCUIT BOARD NO.		DRAWING NO.
VEP20859A		SCM005



COMPONENT NAME	POWER (MAIN 2/3)	02/03
CIRCUIT BOARD NO.		DRAWING NO.
VEP20859A		SCM006


⚠ 警 告
⚠ の部品は、安全上重要な部品です。
交換するときは、安全及び性能維持のため、
必ず指定の部品をご使用ください。
IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS. USE ONLY THE SAME TYPE.
Horizontal deflection drive
High-Voltage stabilizing circuit
Heater-Voltage stabilizing circuit
RV501: Heater-Voltage stabilizing circuit
FBT TC38-39
IC501A TC4426A
IC501B TC4426A
IC502A BA10324AF
IC502B BA10324AF
IC502C BA10324AF
IC502D BA10324AF
IC503 TA75S01F
IC504 SN74HC175APW
D501 DA204U
D502 DA204U
D503 DA204U
D504 DAN202U
D505 DA204U
D506 DAN202U
D507 LM4041 1.2V
Q501 K2534
Q502 K1826
Q503 K1920
RV501 MVR22 47kB
CN501 IL-S-3P-S2T2-EF
CN502 B4B-PH-K-S
HLC LC37-32
+9.5V
H-SIZE IN
+9.5V IN
HD(+)
FOCUS
SHUTDOWN
SHUTDOWN(1)
SHUTDOWN(2)
Vref
PeakingCTL IN
PeakingCTL OUT
HB
C.BLK1(+)
+5V IN
4:3 BLK IN(+)
Peakingup IN(+)
GND
FBP TRG
HV
H-DEF GND
+H DEF
-H DEF
+60V OUT
4:3 BLK OUT(-)
Peakingup OUT(+)
TP21
TP22
TP23
+H
-H
COMPONENT NAME
HORIZONTAL DEFLECTION(MAIN3/3)
03/03
CIRCUIT BOARD NO.
VEP20859A
DRAWING NO.
SCM007

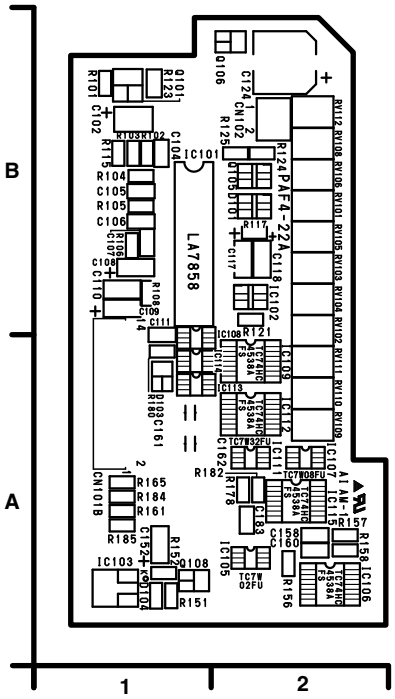
MAIN P.C.BOARD (VEP20859A)



COMPONENT SIDE

REF	LOC
CN001	A1
CN101A	B1
CN301	B1
CN501	A2
CN502	A2
IC301	B2
IC302	B1
IC303	B2
IC304	B2
IC401	B1
IC501	B1
IC502	B2
IC503	A2
IC504	A1
Q402	B2
Q403	B1
Q404	B1
Q501	A2
Q503	A2
RV401	B2
RV501	A2

SUB 1 P.C.BOARD (VEP20860A)



COMPONENT SIDE

REF	LOC
CN101B	A1
CN102	B2
IC101	B1
IC102	B2
IC103	A1
IC105	A2
IC106	A2
IC107	A2
IC109	A2
IC111	A2
IC112	A2
IC113	A2
IC114	A2
IC115	A2
Q101	B1
Q105	B2
Q106	B2
Q108	A1
RV101	B2
RV102	B2
RV103	B2
RV104	B2
RV105	B2
RV106	B2
RV108	B2
RV109	A2
RV110	A2
RV111	A2
RV112	B2

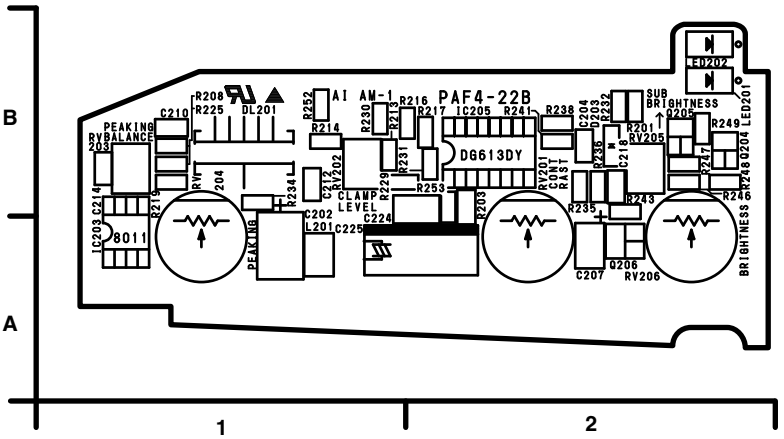
⚠ CAUTION

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS.
USE ONLY THE SAME TYPE.

⚠ 警 告

⚠ の部品は、安全上重要な部品です。
交換するときは、安全及び性能維持のため、
必ず指定の部品をご使用ください。

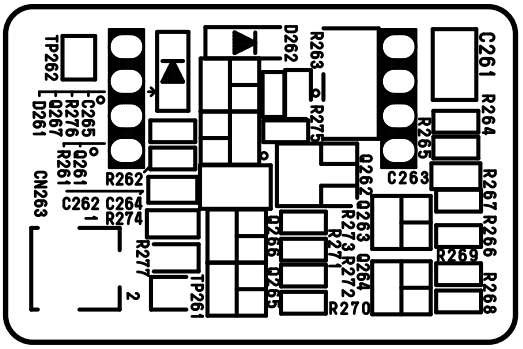
SUB 2 P.C.BOARD (VEP20861A)



COMPONENT SIDE

REF	LOC
IC203	A1
IC205	B2
Q204	A2
Q205	B2
Q206	A2
RV201	A2
RV202	B1
RV203	B1
RV204	A1
RV205	B2
RV206	A2

SUB 3 P.C.BOARD (VEP20862A)



SECTION 5

EXPLODED VIEWS
&
REPLACEMENT PARTS LIST

Note:

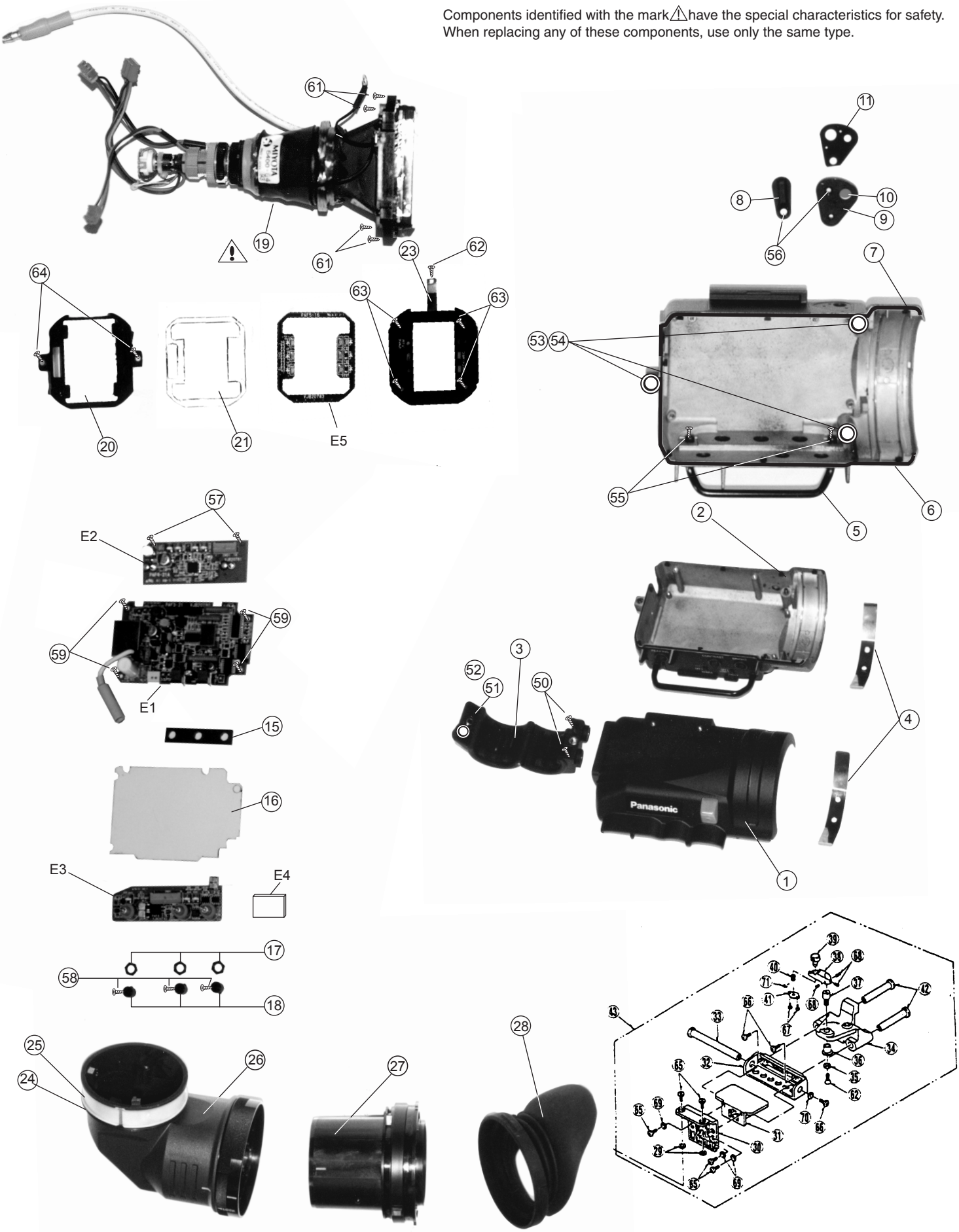
1. *Be sure to make your orders of replacement parts according to this list.
2. Unless otherwise specified, all resistors are in OHMS, K=1,000 OHMS, all capacitors are in MICROFARADS (μF), P=μμF.
3. The P.C. Board untils marked with "■" shown below the main assembled parts.
4. The parts marked with Ⓔ on the exploded view show the electric parts.
5. IMPORTANT SAFETY NOTICE
   Components identified with the mark ⚠ have the special characteristics for safety. When replacing any of these components, use only the same type.
6. The marking (RTL) indicates the retention time is limited for this item.
   After the diacontinuation of this assembly in production, it will no longer be available.

CONTENTS

MECHANICAL PARTS ASSEMBLY ····· PRT-1
PACKING PARTS ASSEMBLY ····· PRT-3
ELECTRICAL REPLACEMENT PARTS LIST ····· PRT-4

MECHANICAL PARTS ASSEMBLY

Components identified with the mark ⚠ have the special characteristics for safety.
When replacing any of these components, use only the same type.



MECHANICAL PARTS ASSEMBLY

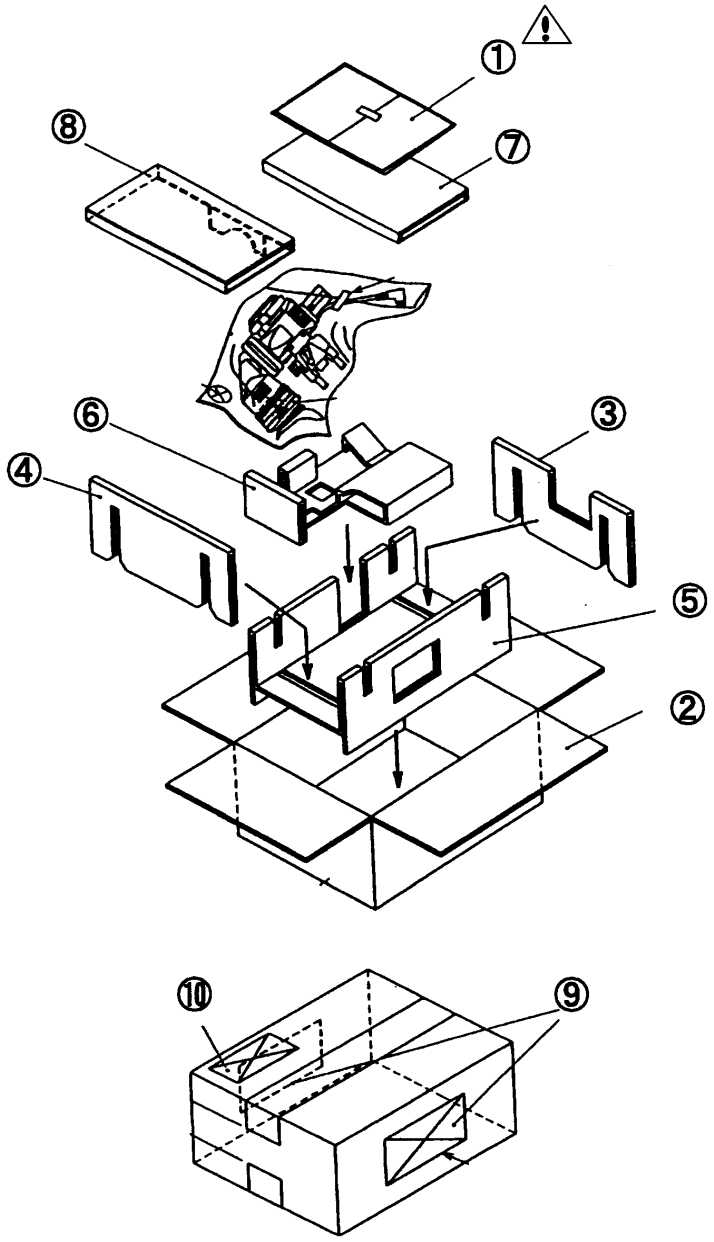
Components identified with the mark ⚠ have the special characteristics for safety.
When replacing any of these components, use only the same type.

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
1	VYK9294	TOP CASE ASS'Y	1	
2	VYK9295	BOTTOM CASE ASS'Y	1	
3	VYC0815	MIC HOLDER ASS'Y	1	
4	VMC1513	PLATE SPRING	1	
5	VKH0389	GUARD BAR	1	
6	VMG1217	CASE PACKING (1)	1	
7	VMG1218	CASE PACKING (2)	1	
8	VGU8170	TALLY KNOB	1	
9	VGQ5321	TALLY BASE	1	
10	VGL0837	TALLY COVER	1	
11	VMG1219	TALLY SHEET	1	
12	VEC0969	VF CABLE	1	
13	VEE0J46	13P CABLE	1	
14	VEE0J45	10P CABLE	1	
15	VMG1225	SWITCH PACKING	1	
16	VMZ2914	INSULATION	1	
17	VHD1264	VR NUT	3	
18	VGU8171	VR KNOB	3	
⚠ 19	VEK9030	CRT/DY ASS'Y	1	
20	VGH4300	DISPLAY PLATE	1	
21	VMZ2915	MASK SHEET	1	
22	VEE0J45	10P CABLE	1	
23	VMX2890	MASK SPACER	1	
24	VMG1221	LENS LOCK PACKING	1	
25	VMX2886	SLIP RING	1	
26	VGP5040	OUT SIDE HOLDER	1	
27	VYC0810	LENS CASE	1	
28	VMG1224	EYE CAP	1	
29	VMX1558	NYLON WASHER	2	
30	VGM1657	LOCK BASE	1	
31	VMG1655	LOCK TABLE	1	
32	VMG1456	PLATE (B)	1	
33	VMS6274	SHAFT (B)	1	
34	VMG1455	PLATE (A)	1	
35	VMS6221	LOCK SPACER	1	
36	VHD0991	INSERT SCREW	1	
37	VHD0990	LOCK SCREW	1	
38	VGU7714	LOCK LEVER	1	
39	VMS6275	EVF LOCK SHAFT	1	
40	VMB3027	SPRING	1	
41	VMP5089	COVER	1	
42	VMS6273	SHAFT (A)	2	
43	VYQ1818	EVF ATTACHMENT ASS'Y	1	
50	XSB4+12FXKS	SCREW	2	
51	VHD1265	SCREW	1	
52	VMX2835	WASHER	1	
54	VMX2885	WASHER	3	
59	XSB2+4FC	SCREW	4	
65	XSB3+8VZ	SCREW	5	
66	XSB5+8VZ	SCREW	3	
67	XSN26+10FZ	SCREW	3	
68	XXEV3W3FP	SCREW	3	
69	XWA3BFZ	WASHER	3	
70	XWA5BFZ	WASHER	1	
71	XUC2FP	E-RING	1	
E1	VEP20859A	MAIN P.C.BOARD	1	
E2	VEP20860A	SUB1 P.C.BOARD	1	
E3	VEP20861A	SUB2 P.C.BOARD	1	
E4	VEP20862A	SUB3 P.C.BOARD	1	
E5	VEP20783	LED P.C.BOARD	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks

PACKING PARTS ASSEMBLY

Components identified with the mark⚠have the special characteristics for safety.
When replacing any of these components, use only the same type.



PACKING PARTS ASSEMBLY

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
⚠1	VQT8754	OPERATING INSTRUCTION	1	
2	VPG0A71	PACKING CASE	1	
3	VPN5247	CUSHION A	1	
4	VPN5248	CUSHION B	1	
5	VPN5249	CUSHION C	1	
6	VPN5250	CUSHION D	1	
7	VPN5251	CUSHION E	1	
8	VPN5252	CUSHION F	1	
9	VQL9822	PACKING LABEL	1	
10	VQL8185	CAUTION LABEL	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks

ELECTRICAL REPLACEMENT PARTS LIST

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
■ E1	VEP20859A	MAIN P.C.BOARD	1	(RTL)
■ E2	VEP20860A	SUB1 P.C.BOARD	1	(RTL)
■ E3	VEP20861A	SUB2 P.C.BOARD	1	(RTL)
■ E4	VEP20862A	SUB3 P.C.BOARD	1	(RTL)
■ E5	VEP20783	LED P.C.BOARD	1	(RTL)
■ E1	VEP20859A	MAIN P.C.BOARD	1	(RTL)
C301	VCS1DQ106	E.CAPACITOR 20V 10M	1	
C302	VCS1AQ226	E.CAPACITOR 10V 22M	1	
C303	ECUM1H103KBN	C.CAPACITOR CH 50V 0.01U	1	
C401	VCEV1EBL331	E.CAPACITOR 25V 330U	1	
C402	VCS1VQ105	E.CAPACITOR 35V 1M	1	
C403	ECUM1H152JCN	C.CAPACITOR CH 50V 1500P	1	
C404	VCS1EQ106	E.CAPACITOR 25V 10M	1	
C405	ECUX1H102JCN	C.CAPACITOR CH 50V 1000P	1	
C406	ECUX1E104KBN	C.CAPACITOR CH 25V 0.1U	1	
C407	VCEA1CBG151	E.CAPACITOR 16V 150U	1	
C408	VCS1DQ106	E.CAPACITOR 20V 10M	1	
C409	VCS1DQ475	E.CAPACITOR 20V 4.7M	1	
C410	ECUM1H101JCN	C.CAPACITOR CH 50V 100P	1	
C411,12	ECUM1H152JCN	C.CAPACITOR CH 50V 1500P	2	
C413	ECUX1H102JCN	C.CAPACITOR CH 50V 1000P	1	
C414	ECUX1E104KBN	C.CAPACITOR CH 25V 0.1U	1	
C415	VCEA1CBG151	E.CAPACITOR 16V 150U	1	
C418,19	ECUM1H472KBN	C.CAPACITOR CH 50V 4700P	2	
C501	ECUM1H101JCN	C.CAPACITOR CH 50V 100P	1	
C502,03	ECUX1E104KBN	C.CAPACITOR CH 25V 0.1U	2	
C504	VCS1DQ225	E.CAPACITOR 20V 2.2M	1	
C505	VCS1DQ475	E.CAPACITOR 20V 4.7M	1	
C506,07	ECUX1E104KBN	C.CAPACITOR CH 25V 0.1U	2	
C508	ECUM1H152JCN	C.CAPACITOR CH 50V 1500P	1	
C509	ECUM1H242JCN	C.CAPACITOR CH 50V 2400P	1	
C510	VCF0190392	P.CAPACITOR 3900P	1	
C511	VCF0190222	P.CAPACITOR 2200P	1	
C512	ECUM1H152JCN	C.CAPACITOR CH 50V 1500P	1	
C513	VCS1DQ106	E.CAPACITOR 20V 10M	1	
C514	ECUX1E104KBN	C.CAPACITOR CH 25V 0.1U	1	
C515	ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	1	
C516	VCE0230	E.CAPACITOR	1	
C521	ECUM1H562KBN	C.CAPACITOR CH 50V 5600P	1	
C522	ECUX1E104KBN	C.CAPACITOR CH 25V 0.1U	1	
CN001	VJP3440A020	CONNECTOR (MALE)	1	
CN101A	VJS4408	CONNECTOR (FEMALE)	1	
CN301	VJP1603T	CONNECTOR (MALE)	1	
CN501	VJP1230T	CONNECTOR (MALE)	1	
CN502	VJP4409	CONNECTOR (MALE)	1	
D401,02	SC80204	DIODE	2	
D501-03	DA204U-T106	DIODE	3	
D504	DAN202U	DIODE	1	
D505	DA204U-T106	DIODE	1	
D506	DAN202U	DIODE	1	
D507	LM4041EIM312	DIODE	1	
FBT	VLT0977	TRANSFORMER	1	
HLC	VLQ0928	COIL	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
IC301	TC74HC164AF	IC	1	
IC302	M66311FP	IC	1	
IC303	TC74HC08AF	IC	1	
IC304	TC7W04F	IC	1	
IC401	BA9743AFV	IC	1	
IC501	TC4426AE0A	IC	1	
IC502	BA10324AF	IC	1	
IC503	TA75S01F	IC	1	
IC504	SN74HC175APW	IC	1	
L401,02	VLQ0929	COIL	2	
L403	VLQ0891	COIL	1	
Q301-03	2SC4081	TRANSISTOR	3	
Q402	SI4953DY	TRANSISTOR	1	
Q403,04	XN4601	TRANSISTOR-RESISTOR	2	
Q501	2SK2534	TRANSISTOR	1	
Q502	2SK1826	TRANSISTOR	1	
Q503	2SK1920	TRANSISTOR	1	
R301	ERJ3RBD223	M.RESISTOR CH 1/16W 22K	1	
R302	ERJ3RBD333	M.RESISTOR CH 1/16W 33K	1	
R303	ERJ3RBD103	M.RESISTOR CH 1/16W 10K	1	
R304	ERJ3RBD104	M.RESISTOR CH 1/16W 100K	1	
R306	ERJ3RBD331	M.RESISTOR CH 1/16W 330	1	
R307,08	ERJ3RBD102	M.RESISTOR CH 1/16W 1K	2	
R309	ERJ3RBD332	M.RESISTOR CH 1/16W 3.3K	1	
R310	ERJ3RBD102	M.RESISTOR CH 1/16W 1K	1	
R311,12	ERJ3RBD331	M.RESISTOR CH 1/16W 330	2	
R318	ERJ3RBD102	M.RESISTOR CH 1/16W 1K	1	
R320	ERJ3RBD472	M.RESISTOR CH 1/16W 4.7K	1	
R321	ERJ3RBD332	M.RESISTOR CH 1/16W 3.3K	1	
R323	ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	1	
R325,26	ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	2	
R327	ERJ3RBD471	M.RESISTOR CH 1/16W 470	1	
R328	ERJ3RBD272	M.RESISTOR CH 1/16W 2.7K	1	
R329	ERJ3RBD103	M.RESISTOR CH 1/16W 10K	1	
R330-32	ERJ3RBD102	M.RESISTOR CH 1/16W 1K	3	
R333,34	ERJ3RBD473	M.RESISTOR CH 1/16W 47K	2	
R401	VRE0218	M.RESISTOR CH	1	
R403	ERJ6GEYG362	M.RESISTOR CH 1/10W 3.6K	1	
R404	ERJ3RBD102	M.RESISTOR CH 1/16W 1K	1	
R405	ERJ3RED4R7	M.RESISTOR CH 1/16W 4.7	1	
R406	ERJ3RBD331	M.RESISTOR CH 1/16W 330	1	
R407	ERJ6RED164	M.RESISTOR CH 3W 160K	1	
R408	ERJ3RBD223	M.RESISTOR CH 1/16W 22K	1	
R409-11	ERJ3RBD333	M.RESISTOR CH 1/16W 33K	3	
R412	ERJ3RBD332	M.RESISTOR CH 1/16W 3.3K	1	
R413	ERJ3RBD103	M.RESISTOR CH 1/16W 10K	1	
R414	ERJ3RBD123	M.RESISTOR CH 1/16W 12K	1	
R415	ERJ3RBD822	M.RESISTOR CH 1/16W 8.2K	1	
R416	ERJ3RBD223	M.RESISTOR CH 1/16W 22K	1	
R417	ERJ6GEYG362	M.RESISTOR CH 1/10W 3.6K	1	
R418	ERJ3RBD102	M.RESISTOR CH 1/16W 1K	1	
R419	ERJ3RED4R7	M.RESISTOR CH 1/16W 4.7	1	
R420	ERJ3RBD331	M.RESISTOR CH 1/16W 330	1	
R421	ERJ3RBD433	M.RESISTOR CH 1/16W 43K	1	
R422	ERJ3RBD103	M.RESISTOR CH 1/16W 10K	1	
R501	ERJ3RBD332	M.RESISTOR CH 1/16W 3.3K	1	
R502	ERJ3RBD103	M.RESISTOR CH 1/16W 10K	1	
R503	ERJ3RED4R7	M.RESISTOR CH 1/16W 4.7	1	
R504	ERJ3RBD513	M.RESISTOR CH 1/16W 51K	1	
R505	ERJ3RBD512	M.RESISTOR CH 1/16W 5.1K	1	
R506	ERJ3RBD623	M.RESISTOR CH 1/16W 62K	1	
R507,08	ERJ3RBD333	M.RESISTOR CH 1/16W 33K	2	
R509	ERJ3RBD243	M.RESISTOR CH 1/16W 24K	1	
R510	ERJ3RBD623	M.RESISTOR CH 1/16W 62K	1	
R511	ERJ3RBD103	M.RESISTOR CH 1/16W 10K	1	
R512-14	ERJ3RBD332	M.RESISTOR CH 1/16W 3.3K	3	
R515	ERJ3RED4R7	M.RESISTOR CH 1/16W 4.7	1	
R516	ERJ3RBD101	M.RESISTOR CH 1/16W 100	1	
R517	ERJ3RBD103	M.RESISTOR CH 1/16W 10K	1	
R518	ERJ3RBD273	M.RESISTOR CH 1/16W 27K	1	
R522	ERJ6GEYG221	M.RESISTOR CH 1/10W 220	1	
R526	ERJ6GEYG681	M.RESISTOR CH 1/10W 680	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R527,28	ERJ3RBD104	M.RESISTOR CH 1/16W 100K	2	
R529,30	ERJ3RBD223	M.RESISTOR CH 1/16W 22K	2	
R531	ERJ3RBD101	M.RESISTOR CH 1/16W 100	1	
R532	ERJ3RBD102	M.RESISTOR CH 1/16W 1K	1	
R533	ERJ3RBD101	M.RESISTOR CH 1/16W 100	1	
RV401	VRV0327472	V.RESISTOR 4.7K	1	
RV501	VRV0327473	V.RESISTOR 47K	1	
S302	VST0332	SWITCH	1	
S303	VST0333	SWITCH	1	
■ E2	VEP20860A	SUB1 P.C.BOARD	1	(RTL)
C101	VCS1CQ107	E.CAPACITOR 16V 100M	1	
C102	VCS1DQ106	E.CAPACITOR 20V 10M	1	
C103	VCS1CQ107	E.CAPACITOR 16V 100M	1	
C104	ECUM1H101JCN	C.CAPACITOR CH 50V 100P	1	
C105	ECUM1H242JCN	C.CAPACITOR CH 50V 2400P	1	
C106	ECUM1H561JCN	C.CAPACITOR CH 50V 560P	1	
C107	ECUX1E332JCN	C.CAPACITOR CH 25V 0.056U	1	
C108,09	VCS1VQ105	E.CAPACITOR 35V 1M	2	
C110	ECWU1H103JB5	P.CAPACITOR CH 50V 0.01U	1	
C111	ECHU1H182JB5	P.CAPACITOR 50V 1800P	1	
C112	ECUM1H152JCN	C.CAPACITOR CH 50V 1500P	1	
C113	ECUX1E104KBN	C.CAPACITOR CH 25V 0.1U	1	
C114	VCS1DQ106	E.CAPACITOR 20V 10M	1	
C115	VCS1CQ107	E.CAPACITOR 16V 100M	1	
C116	VCS0127V104	E.CAPACITOR 0.1M	1	
C117	VCS1DQ225	E.CAPACITOR 20V 2.2M	1	
C118	VCS0127E474	E.CAPACITOR 0.47M	1	
C119	ECUX1E104KBN	C.CAPACITOR CH 25V 0.1U	1	
C120	ECUM1H101JCN	C.CAPACITOR CH 50V 100P	1	
C121	VCS1CQ107	E.CAPACITOR 16V 100M	1	
C122	VCS1DQ106	E.CAPACITOR 20V 10M	1	
C123	ECUM1H562KBN	C.CAPACITOR CH 50V 5600P	1	
C124	VCEV1CBL471	E.CAPACITOR 16V 470U	1	
C125	ECUM1H103KBN	C.CAPACITOR CH 50V 0.01U	1	
C126	ECUX1H333KBN	C.CAPACITOR CH 50V 0.033U	1	
C151	VCS1DQ106	E.CAPACITOR 20V 10M	1	
C152	VCS1DQ475	E.CAPACITOR 20V 4.7M	1	
C153	ECUM1H220JCN	C.CAPACITOR CH 50V 22P	1	
C154	VCS1DQ475	E.CAPACITOR 20V 4.7M	1	
C155,56	ECUX1E104KBN	C.CAPACITOR CH 25V 0.1U	2	
C157	ECUM1H220JCN	C.CAPACITOR CH 50V 22P	1	
C158	ECUM1H101JCN	C.CAPACITOR CH 50V 100P	1	
C159	ECUX1E104KBN	C.CAPACITOR CH 25V 0.1U	1	
C160	ECUM1H101JCN	C.CAPACITOR CH 50V 100P	1	
C163	ECUM1H220JCN	C.CAPACITOR CH 50V 22P	1	
C164	ECUX1E104KBN	C.CAPACITOR CH 25V 0.1U	1	
C171	ECUX1E332JCN	C.CAPACITOR CH 25V 0.056U	1	
C172	ECUX1E104KBN	C.CAPACITOR CH 25V 0.1U	1	
C174	ECUM1H101JCN	C.CAPACITOR CH 50V 100P	1	
C175	ECUM1H220JCN	C.CAPACITOR CH 50V 22P	1	
C176	ECUX1E104KBN	C.CAPACITOR CH 25V 0.1U	1	
C180	ECUM1H561JCN	C.CAPACITOR CH 50V 560P	1	
C183	ECUM1H101JCN	C.CAPACITOR CH 50V 100P	1	
C184	ECUM1H561JCN	C.CAPACITOR CH 50V 560P	1	
C185	ECUX1E104KBN	C.CAPACITOR CH 25V 0.1U	1	
C186	ECUM1H220JCN	C.CAPACITOR CH 50V 22P	1	
CN101B	VJP4410	CONNECTOR (MALE)	1	
CN102	VJP1843	CONNECTOR (MALE)	1	
D101	IMN10	DIODE	1	
D103	DA204U-T106	DIODE	1	
D104	MA2S728	DIODE	1	
IC101	LA7858	IC	1	
IC102	TA75S393F	IC	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
IC103	TA78L05F	IC	1	
IC104	GS49811KA	IC	1	
IC105	TC7W02FU	IC	1	
IC106	TC74HC4538AF	IC	1	
IC107	TC7W08FU	IC	1	
IC108	TC4W53FU	IC	1	
IC109	TC74HC4538AF	IC	1	
IC110	TC4427AE0A	IC	1	
IC111	TC7W32FU	IC	1	
IC112	TC74HC4538AF	IC	1	
IC113	TC7W32FU	IC	1	
IC114	TC7W00FU	IC	1	
IC115	TC74HC4538AF	IC	1	
LED101	CL200HR-CTUL	DIODE	1	
Q101	2SC3661	TRANSISTOR	1	
Q104	2SC4081	TRANSISTOR	1	
Q105	XN4601	TRANSISTOR-RESISTOR	1	
Q106	2SC4081	TRANSISTOR	1	
Q108	2SC4081	TRANSISTOR	1	
Q201	2SA1580	TRANSISTOR	1	
R101	ERJ3RBD103	M.RESISTOR CH 1/16W 10K	1	
R102	ERJ3RBD222	M.RESISTOR CH 1/16W 2.2K	1	
R103	ERJ3RBD223	M.RESISTOR CH 1/16W 22K	1	
R104	ERJ3RBD123	M.RESISTOR CH 1/16W 12K	1	
R105	ERJ3RBD822	M.RESISTOR CH 1/16W 8.2K	1	
R106	ERJ3RBD104	M.RESISTOR CH 1/16W 100K	1	
R108	ERJ3RBD333	M.RESISTOR CH 1/16W 33K	1	
R109	ERJ3RBD912	M.RESISTOR CH 1/16W 9.1K	1	
R110	ERJ3RBD102	M.RESISTOR CH 1/16W 1K	1	
R111	ERJ3RBD303	M.RESISTOR CH 1/16W 30K	1	
R112	ERJ3RBD183	M.RESISTOR CH 1/16W 18K	1	
R114	ERJ3RBD562	M.RESISTOR CH 1/16W 5.6K	1	
R115	ERJ3RED120	M.RESISTOR CH 1/16W 12	1	
R116	ERJ3RED184	M.RESISTOR CH 1/16W 180K	1	
R117	ERJ3RED124	M.RESISTOR CH 1/16W 120K	1	
R118	ERJ3RBD122	M.RESISTOR CH 1/16W 1.2K	1	
R119	ERJ3RBD104	M.RESISTOR CH 1/16W 100K	1	
R120,21	ERJ3RBD512	M.RESISTOR CH 1/16W 5.1K	2	
R122	ERJ3RBD221	M.RESISTOR CH 1/16W 220	1	
R123	ERJ6GEYJ4R7	M.RESISTOR CH 1/10W 4.7K	1	
R124	ERJ3RBD472	M.RESISTOR CH 1/16W 4.7K	1	
R125	ERJ3RBD332	M.RESISTOR CH 1/16W 3.3K	1	
R126,27	ERJ6GEYJ4R7	M.RESISTOR CH 1/10W 4.7K	2	
R128	ERJ6GEYG331	M.RESISTOR CH 1/10W 330	1	
R129	ERJ3RED430	M.RESISTOR CH 1/16W 43	1	
R130	ERJ6GEYJ4R7	M.RESISTOR CH 1/10W 4.7K	1	
R132	ERJ3RBD331	M.RESISTOR CH 1/16W 330	1	
R135	ERJ3RBD183	M.RESISTOR CH 1/16W 18K	1	
R136	ERJ3RBD472	M.RESISTOR CH 1/16W 4.7K	1	
R138	ERJ3RBD222	M.RESISTOR CH 1/16W 2.2K	1	
R139	ERJ3RBD513	M.RESISTOR CH 1/16W 51K	1	
R140	ERJ3RBD153	M.RESISTOR CH 1/16W 15K	1	
R141	ERJ3RBD103	M.RESISTOR CH 1/16W 10K	1	
R142	ERJ3RBD183	M.RESISTOR CH 1/16W 18K	1	
R143	ERJ3RBD512	M.RESISTOR CH 1/16W 5.1K	1	
R151	ERJ3RBD473	M.RESISTOR CH 1/16W 47K	1	
R152,53	ERJ3RBD222	M.RESISTOR CH 1/16W 2.2K	2	
R154	ERJ3RBD103	M.RESISTOR CH 1/16W 10K	1	
R155	ERJ3RED224	M.RESISTOR CH 1/16W 220K	1	
R156	ERJ3RBD221	M.RESISTOR CH 1/16W 220	1	
R157	ERJ3RBD103	M.RESISTOR CH 1/16W 10K	1	
R158	ERJ3RBD242	M.RESISTOR CH 1/16W 2.4K	1	
R159,60	ERJ3RBD332	M.RESISTOR CH 1/16W 3.3K	2	
R161	ERJ3RBD102	M.RESISTOR CH 1/16W 1K	1	
R162	ERJ3RBD183	M.RESISTOR CH 1/16W 18K	1	
R163	ERJ3RBD562	M.RESISTOR CH 1/16W 5.6K	1	
R164	ERJ3RBD221	M.RESISTOR CH 1/16W 220	1	
R165	ERJ3RED220	M.RESISTOR CH 1/16W 22	1	
R171	ERJ3RBD123	M.RESISTOR CH 1/16W 12K	1	
R172	ERJ3RBD203	M.RESISTOR CH 1/16W 20K	1	
R173	ERJ3RBD333	M.RESISTOR CH 1/16W 33K	1	
R174	ERJ3RBD133	M.RESISTOR CH 1/16W 13K	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R175	ERJ3RED204	M.RESISTOR CH 1/16W 200K	1	
R176	ERJ3RBD332	M.RESISTOR CH 1/16W 3.3K	1	
R177	ERJ3RBD273	M.RESISTOR CH 1/16W 27K	1	
R178	ERJ3RED220	M.RESISTOR CH 1/16W 22	1	
R179	ERJ3RBD561	M.RESISTOR CH 1/16W 560	1	
R180	ERJ3RED220	M.RESISTOR CH 1/16W 22	1	
R181,82	ERJ3RBD562	M.RESISTOR CH 1/16W 5.6K	2	
R183	ERJ3RBD472	M.RESISTOR CH 1/16W 4.7K	1	
R184,85	ERJ3RBD101	M.RESISTOR CH 1/16W 100	2	
R190	ERJ3RBD222	M.RESISTOR CH 1/16W 2.2K	1	
RV101-04	VRV03285K	V.RESISTOR	4	
RV105	VRV0328200K	V.RESISTOR 20	1	
RV106	VRV0328200	V.RESISTOR	1	
RV108-11	VRV03285K	V.RESISTOR	4	
RV112	VRV032820K	V.RESISTOR	1	
■ E3	VEP20861A	SUB2 P.C.BOARD	1	(RTL)
C201-03	VCS1CQ107	E.CAPACITOR 16V 100M	3	
C204	ECUX1E104KBN	C.CAPACITOR CH 25V 0.1U	1	
C205	ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	1	
C206,07	VCS1CQ107	E.CAPACITOR 16V 100M	2	
C208	ECUM1H103KBN	C.CAPACITOR CH 50V 0.01U	1	
C209	ECUX1E104KBN	C.CAPACITOR CH 25V 0.1U	1	
C211,12	ECUX1E104KBN	C.CAPACITOR CH 25V 0.1U	2	
C213	ECUM1H220JCN	C.CAPACITOR CH 50V 22P	1	
C214-16	ECUX1E104KBN	C.CAPACITOR CH 25V 0.1U	3	
C217	VCS1DQ475	E.CAPACITOR 20V 4.7M	1	
C218	ECUX1E104KBN	C.CAPACITOR CH 25V 0.1U	1	
C219	VCS1EQ155	E.CAPACITOR 25V 1.5M	1	
C220	ECUX1H102JCN	C.CAPACITOR CH 50V 1000P	1	
C221,22	ECUX1E104KBN	C.CAPACITOR CH 25V 0.1U	2	
C225	VCE0231	E.CAPACITOR	1	
C230	ECUX1H102JCN	C.CAPACITOR CH 50V 1000P	1	
CN202,03	VJP4411	CONNECTOR (MALE)	2	
D201	DAN202U	DIODE	1	
D202	UDZ15B	DIODE	1	
D203	UDZ5.1B	DIODE	1	
DL201	VLD0420	DELAY LINE	1	
IC201	BA10324AF	IC	1	
IC202	CA3094M	IC	1	
IC203	AD8014AR	IC	1	
IC204	HFA11351B	IC	1	
IC205	DG613DY	IC	1	
L201	VLQ0930	COIL	1	
LED201,02	CL200HR-CTUL	DIODE	2	
Q202,03	2SC4104	TRANSISTOR	2	
Q204	2SA1579	TRANSISTOR	1	
Q205	2SC4102	TRANSISTOR	1	
Q206	2SC3661	TRANSISTOR	1	
R201	ERJ3RBD333	M.RESISTOR CH 1/16W 33K	1	
R203	ERJ6GEYJ820	M.RESISTOR CH 1/10W 82	1	
R204	ERJ3RBD181	M.RESISTOR CH 1/16W 180	1	
R205	ERJ3RBD103	M.RESISTOR CH 1/16W 10K	1	
R206	ERJ3RBD332	M.RESISTOR CH 1/16W 3.3K	1	
R207	ERJ3RBD103	M.RESISTOR CH 1/16W 10K	1	
R209,10	ERJ3RBD512	M.RESISTOR CH 1/16W 5.1K	2	
R211	ERJ3RBD103	M.RESISTOR CH 1/16W 10K	1	
R212	ERJ3RBD101	M.RESISTOR CH 1/16W 100	1	
R213,14	ERJ3RBD102	M.RESISTOR CH 1/16W 1K	2	
R215	ERJ3RBD332	M.RESISTOR CH 1/16W 3.3K	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R216	ERJ3RED510	M.RESISTOR CH 1/16W 51	1	
R217	ERJ3RBD102	M.RESISTOR CH 1/16W 1K	1	
R218,19	ERJ3RBD151	M.RESISTOR CH 1/16W 150	2	
R220,21	ERJ3RBD102	M.RESISTOR CH 1/16W 1K	2	
R222,23	ERJ3RBD361	M.RESISTOR CH 1/16W 360	2	
R224	ERJ3RBD102	M.RESISTOR CH 1/16W 1K	1	
R225	ERJ3RBD821	M.RESISTOR CH 1/16W 820	1	
R226	ERJ3RBD123	M.RESISTOR CH 1/16W 12K	1	
R227	ERJ3RBD103	M.RESISTOR CH 1/16W 10K	1	
R228	ERJ3RED510	M.RESISTOR CH 1/16W 51	1	
R229	ERJ3RBD221	M.RESISTOR CH 1/16W 220	1	
R230,31	ERJ3RBD101	M.RESISTOR CH 1/16W 100	2	
R232	ERJ3RBD223	M.RESISTOR CH 1/16W 22K	1	
R234	ERJ3RBD221	M.RESISTOR CH 1/16W 220	1	
R235,36	ERJ3RBD203	M.RESISTOR CH 1/16W 20K	2	
R237	ERJ3RBD823	M.RESISTOR CH 1/16W 82K	1	
R238	ERJ3RBD102	M.RESISTOR CH 1/16W 1K	1	
R239	ERJ3RBD221	M.RESISTOR CH 1/16W 220	1	
R240	ERJ3RBD103	M.RESISTOR CH 1/16W 10K	1	
R241	ERJ3RBD102	M.RESISTOR CH 1/16W 1K	1	
R242	ERJ3RED510	M.RESISTOR CH 1/16W 51	1	
R243	ERJ3RBD473	M.RESISTOR CH 1/16W 47K	1	
R244	ERJ3RBD512	M.RESISTOR CH 1/16W 5.1K	1	
R246,47	ERJ3RBD103	M.RESISTOR CH 1/16W 10K	2	
R248	ERJ3RBD104	M.RESISTOR CH 1/16W 100K	1	
R249,50	ERJ3RBD513	M.RESISTOR CH 1/16W 51K	2	
R251	ERJ3RBD512	M.RESISTOR CH 1/16W 5.1K	1	
R252	ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	1	
R253	ERJ3RBD101	M.RESISTOR CH 1/16W 100	1	
R254	ERJ3RBD163	M.RESISTOR CH 1/16W 16K	1	
R255	ERJ3RBD913	M.RESISTOR CH 1/16W 91K	1	
R256	ERJ3RBD363	M.RESISTOR CH 1/16W 36K	1	
R257	ERJ3RBD473	M.RESISTOR CH 1/16W 47K	1	
RV201	VRV0305B102	V.RESISTOR 1K	1	
RV202	VRV03285K	V.RESISTOR	1	
RV203	VRV0328500	V.RESISTOR 50	1	
RV204	VRV0305B102	V.RESISTOR 1K	1	
RV205	VRV0328200K	V.RESISTOR 20	1	
RV206	VRV0305B103	V.RESISTOR 10K	1	
■ E4	VEP20862A	SUB3 P.C.BOARD	1	(RTL)
C262	ECUM1H221JCN	C.CAPACITOR CH 50V 220P	1	
C263	ECUX1E104KBN	C.CAPACITOR CH 25V 0.1U	1	
C265	ECUX1E104KBN	C.CAPACITOR CH 25V 0.1U	1	
CN261,62	VJS4412	CONNECTOR (FEMALE)	5	
CN263	VJP4413	CONNECTOR (MALE)	1	
D261	HZK2ALL	DIODE	1	
D262	RLS245	DIODE	1	
Q261	2SC4104	TRANSISTOR	1	
Q262	2SC4080	TRANSISTOR	1	
Q263	2SC4104	TRANSISTOR	1	
Q264	2SA1580	TRANSISTOR	1	
Q265	2SC4104	TRANSISTOR	1	
Q266	2SA1580	TRANSISTOR	1	
Q267	2SC4104	TRANSISTOR	1	
R261	ERJ3RBD511	M.RESISTOR CH 1/16W 510	1	
R262	ERJ3RBD131	M.RESISTOR CH 1/16W 130	1	
R264	ERJ3RBD101	M.RESISTOR CH 1/16W 100	1	
R265	ERJ3RBD103	M.RESISTOR CH 1/16W 10K	1	
R266	ERJ3RBD101	M.RESISTOR CH 1/16W 100	1	
R267	ERJ3RBD123	M.RESISTOR CH 1/16W 12K	1	
R268	ERJ3RBD101	M.RESISTOR CH 1/16W 100	1	
R269	ERJ3RBD123	M.RESISTOR CH 1/16W 12K	1	
R270,71	ERJ3RBD101	M.RESISTOR CH 1/16W 100	2	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R272,73	ERJ3RED330	M.RESISTOR CH 1/16W 33	2	
R274	ERJ6GEYJ106	M.RESISTOR CH 1/10W 10M	1	
R275	ERJ3RBD511	M.RESISTOR CH 1/16W 510	1	
R276	ERJ3RED514	M.RESISTOR CH 1/16W 510K	1	
R277	ERJ6GEYG221	M.RESISTOR CH 1/10W 220	1	
■ E5	VEP20783	LED P.C.BOARD	1	(RTL)
CN41	VJP1603T	CONNECTOR (MALE)	1	
D1	CL-150UR-CD	LED	1	
D2	CL-150D-CD	LED	1	
D3	CL-150UR-CD	LED	1	
D4,D5	CL-150PG-CD	LED	2	
D6	CL-150D-CD	LED	1	
D9	CL-150PG-CD	LED	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks